

KNOWLEDGE MANAGEMENT

ASPECTS OF KNOWLEDGE

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The debate about the future of management in the emerging “Knowledge Economy” has been developing for the best part of two decades. Yet issues concerning the nature and value of knowledge to organisations can hardly claim to be new. Indeed it could be said that Taylor was amongst the first to formalise the application of (scientific) knowledge to work. However, in an increasingly complex, global and competitive business environment the need for knowledgeable people becomes ever more pressing. The knowledge industries – education and training, legal and advisory services, research and development, political and commercial intelligence have all been in existence for as long as civilisation. So is Knowledge Management simply a case of old wine being decanted into new bottles or do we need to revisit our insights into the nature and role of knowledge as an asset and corporate resource ?

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Knowledge Management - Aspects of Knowledge

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Introduction

Since the 1980's academics and consultants have begun to take an increasing interest in knowledge management issues in the context of improving organisational performance. Peter Drucker identified the impacts of changing knowledge in his book "Innovation and Entrepreneurship" (1985). He again raised the economic and social issues of the performance of the "knowledge worker" in "Managing for the Future" (1992). James Badaracco investigated the strategic value of alliances for corporate knowledge in "The Knowledge Link" (HBS, 1991). The subject also attracted attention from Tom Peters in "Liberation Management" (1992). Nonaka and Takeuchi have provided us with the "knowledge spiral" model (The Knowledge Creating Company, OUP, 1995). Further issues are explored in a range of articles by academics from various disciplines (see *Knowing in Firms*, Sage, 1998).

In general terms it is claimed that the nature of work is shifting away from labour and capital and towards information and knowledge (i.e. knowledge is the new capital of organisations). Technological enablers which support and accelerate this change range from internet and intranet applications, through computer-supported co-operative working to knowledge-based systems and the early applications of Artificial Intelligence. The psychological, human resources and personal development interests are also active in areas such as the "Learning Organisation". Organisations have also appointed Chief Knowledge Officers and begun to found corporate "universities". We can also bring the management of "intellectual property" under the "Knowledge Management" umbrella. (see *Management Services*, Sept 2001). If these developments and interests are to bear fruit then the subject of "Knowledge", traditionally in the realm of philosophy, merits re-examination from a management perspective. There are however few, if any, generally available models to enable the knowledge aspects of organisations to be identified, defined and evaluated.

Developing a multi-aspect view of Knowledge

What is becoming increasingly clear is that there is no simple “single view” or “single definition” within which all the aspects of knowledge management can be examined. Knowledge is beginning to be understood as an integration of multiple perspectives. The main theme of this article is to explore some of these perspectives and to attempt to provide an integrative (or unifying) model allowing a more complete approach to knowledge management problems to be formulated. The model attempts to demonstrate a “systematic” approach by analysing “aspects” of knowledge into their various parts, yet showing that it is impossible or impracticable to “have knowledge” without all (or at least several) of the different aspects of our knowledge working together in a systemic manner. Both faces of a coin may appear to be different yet they both provide a valid view of the same object.

Recent research into the way the human brain works also indicates that whilst there are focal regions (processing centres) for vision, language, emotions, motor control, creativity, memory and cognitive thought, the functions themselves are highly interdependent. The brain actually “fires up” several functional areas simultaneously regardless of whether the problem it encounters is logical or creative, practical or abstract, visual or tactile. The implication would seem to be that our knowledge is a composition of “harmonised” component parts in the same way that a piece of music is a composition of melody, harmony, rhythm and key (or mood).

The many definitions of knowledge presented by different schools of philosophy over the centuries would also seem to support the multi-aspect approach. The Philosophy of Knowledge broadly divides into debates about the questions “What is it possible to know” (ontology) and “How can we be certain of what we know” (epistemology). Rationalists insist that knowledge must have logical explanations, Existentialists claim that knowledge is rooted in what we have experienced. Pragmatists claim that knowledge has to have a useful purpose, Idealists claim that knowledge resolves into perfect forms which have distinctive essential characteristics, whereas Realists may focus on knowledge gained from activity (the basis of Action-Centred Learning). Opportunists may focus on identifying desirable outcomes. Protagonists may try and persuade us that achieving the ends justify the means yet Moralists (and Sceptics) may disagree (each for their own reasons). Adopting some of these viewpoints as complementary, rather than competing, aspects can provide the basis for producing a first attempt at a general model of knowledge.

An “Ideographic” model (a knowledge map for knowledge)

The term “Ideography” refers to the creation and use of “Maps” of ideas to assist in determining reference points for the topic under investigation. The purpose of an ideographic map or model is to provide a working framework for discussion of topics where the several various aspects need to be considered in an interrelated way as well as by taking each aspect separately.

A provisional model entitled “Aspects of Knowledge (of Entity “E”)” is included as appendix A and should be referred to throughout the discussion which follows. The model is better represented in three dimensions as a “molecular structure” constructed from rods and coloured spheres however the nature of the printed page restricts us to a two dimensional view for publication purposes. The complementary axes of the model represent aspects traditionally seen as opposites.

Objective Explanation (Blue)	v	Subjective Experience (Red)
Identity - what something is (Green)	v	Method – how to make it (Yellow)
Implications – where it leads (Black)	v	Activities – changes over time (Brown)

The “centre” (Beige) provides us with a “focal lens” through which to “see” the “scope and terms of reference” for the subject, object or event about which we claim to know something. It may help to envisage this aspect as an information centre or “map room” for what we know – co-ordinating symbolic information from all the other aspects. The centre thus carries with it the “systems attributes” of our knowledge – the boundaries, structure and context of the subject or topic. The name given to this symbolic and informational aspect is an “Entity” (E).

In more conventional terms our knowledge of Entity “E” combines our knowledge of reasons “**why** E”, experiences “**who** does it feel like to be E”, classifications “the distinctive characteristics which “make E **what** it is”, location “**where** is E”, construction “**how** E fits together”, events “**when** E does something”. The missing question word in this sequence is the choice (or decision) question “**which**”. It could be said that we “know” (about “E”) when all the different question elements have been resolved (i.e. all the questions are answerable).

Internal and External interdependencies

By looking at each aspect in turn, and by adopting ideas from a range of disciplines (e.g. philosophy, psychology, science, humanities, management, systems thinking etc.) we discover that questions raised from a particular viewpoint can only be dealt with by reference to some, or all, of the other aspects. As a simple exercise, try describing who one of your colleagues is to someone without giving them a “name” (symbolic representation) or saying what they look like, where they live (or work), what their professional area of expertise is or to some activity or experience they have been involved in. Alternatively try to explain a rational decision (a why → which combination) without reference to characteristics, behaviours, methods, activities, resources, results, methods and experiences associated with that particular choice.

The aspects in more detail

Starting with the informational “focal lens”. When we focus on our knowledge of “E” (called an entity because it is a “symbolic representation” rather than the “thing in itself”) then we can say that “E” has got our attention. One of the problems with our attention is that there is a limited amount of it and it tends to wander. As our attention shifts around a subject (possibly seeking to confirm our knowledge) then so do the “terms and content” of our thought processes. This is rather like having a compass with a magnifier in the centre and using it on a map of the London area. If the lens is moved across the map to examine a related area the “compass bearings” may remain constant but the place names seen through the lens change. If we focus in on a particular street we lose sight of the wider environment and if we take a wider view we lose sight of the details. Sustaining attention (as every teacher knows) can be a problem.

Moving to “experience” as a form of knowledge. Experience derives from specific “cases” or combinations of events relating specific times and places. Experience provides us with the “what it is like to be” aspect of knowledge resulting from having been subjected to events. There is a world of difference between being studying events as a subject and “living through” or being subjected to them. The content of our experiences is a rich tapestry of “life as-it-happens”, and our memories of experiences are usually closely associated with our senses and emotions (pleasure-pain, hope-fear, motivation-expectation, safety-danger, familiarity-surprise). Experience, however, may not merely be the result of external situations, but embodies the experience of the other aspects of knowledge. We feel confused if a situation cannot be rationalised – the philosopher aspect is telling us that things are “unreasonable”. We may have problems with things we cannot classify as safe or dangerous, right or wrong. Those things we have pre-classified as expected, identified, reasonable, acceptable, effective and timely become “habituated” as the rituals or routines and cease to trigger our attention unless specifically prompted to do so. Behavioural training programmes seek to transfer this type of habituated learning.

Identification brings out a different type of knowledge – the knowledge of features and characteristics which enable a subject, object, event, theory, method, activity or consequential implication (result) to be “distinguished” and “classified”. Whilst there are many thousands of possible characteristics, the categories of the classical philosophers lead us to the right, the good, the true, the beautiful and (perhaps) the practical, the effective and the productive. This is the “categorical” knowledge which enables us to “identify” objects, people and events in our “mind’s eye”. The nature of this aspect is essentially “visual” rather than “symbolic” “structural” or “temporal”.

Knowledge of implications provides the aspect dealing with results or consequences (both desired and unwanted) arising from what we envisage, think, plan, say and do. As with all the other aspects the implications may result from the identities of whatever outcome is envisaged, what is rational, what motives and expectations are present, the situation prevailing at the points when action is taken and the method or approach adopted. Also, in common with other aspects, the implications may be “nested” within (for example) short, medium or long-term horizons. Evaluation (weighing perceived values) of consequences is the foundation for establishing priorities and formulating strategic, tactical and operational decisions. The aspect appears to be essentially “spatial” (where are we and where does this lead us).

Explanation provides the rationale within which identifiable choices (decision opportunities) are “tried and tested” against prevailing theories, principles, laws or constraints pertaining to proposals (or propositions). The keynote question in this aspect is “why” and the answers can again arise from any other aspect of our knowledge. Explanation is also the natural home for the sceptical aspects of science and philosophy (I don’t believe it !). Explanations, linked with the other aspects, lend various degrees of certainty and predictability to our decisions and actions.

Methods provide the “time-structured” aspect of knowledge (i.e. procedural time sequences and time requirements). The traditional association here is with “know-how” and “best practices” applied to physical work. Methods may, however apply to all other aspects such as establishing the identity of the perpetrator of a crime, evaluating the implications, providing explanations, or producing a design.

Activity in a sense speaks for itself. Drucker holds to the view that all useful economic theories ultimately deteriorate into “work activities”. What work activity requires however is a “result”, “identity”, “location”, “motivation”, “resources”, “sequencing” and “synchronisation”. Again the interaction with the other aspects is clearly at play. Activity may be an experience, belong to an identifiable class of activities (e.g. leisure), have a consequence or purpose, be explained in various ways, conducted by various methods and lead to changes in the informational (map-room) through which knowledge and information are co-ordinated.

Implications of the Model

The model attempts to represent the combinatorial and complementary nature of our knowledge. Taking the seven aspects in various combinations and including the “null” aspect (something we know nothing about) leads us to 128 possible combinations, each of which can be described using different terminology depending on the topic or situation and the specialism of a particular author. Many of our current management models are, in effect, selective views based on particular disciplines. The methods engineer sees the world of knowledge from a different perspective to the behavioural psychologist, each producing explanations of events in their own terms. Marketing (identity and positioning in spaces called market sectors) sees things differently from operations (achievable volumes of processes over time). Yet, both disciplines rely on knowledge from other aspects – the marketing department uses research methods and analytical techniques and operations rely on recruitment and motivation of a workforce (marketing the idea of doing various jobs).

Using the model to identify the knowledge needed to resolve problems and make decisions, we can check whether all aspects have been covered. Is there agreement on the identity and definition of the problem, what results are being aimed for, whether the rationale is sound, whether the method is available, whether the time-capacity of resources can be available, whether the solution is “sensible” to those with experience and whether the combination of complementary aspects integrates into an acceptable plan.

Using the model when forming teams, we may seek out members who bring a variety of preferred “knowledge aspects”, or “world-views” (see P Checkland’s work on Soft Systems for further discussion), to the group. This is in addition to their preferred “team roles” (see Belbin) and their “technical specialities”. This view provides an additional reason for the appointment of “outside” team members or for appointing external governors and non-executive directors from a variety of backgrounds.

In graduate and professional educational settings there is an increasing emphasis on improving and evaluating the “learning skills” of students alongside the knowledge of the particular subject they are studying. Early documents identifying these common learning skills can also be matched fairly closely to the aspect model.

Finally, because there are many more possible variants, we may be able to relate the aspects of knowledge to the potential of the various enabling technologies. In particular the use of intranet applications currently seems to be at the stage where many organisations are “building the map room” with content from the organisation’s current manuals of policy and procedures (automating internal publication and distribution). The implication of the knowledge-aspect model is that the full benefits of this access to “information about knowledge” may only be realised when much more functionality becomes available. Case-libraries and video runs to support the “surrogate experience” aspect, relational searches to identify and link definitions and descriptions, clear statements of intended outcomes in association with documentation on methods, access to rationales, theories and principles and demonstrations of the way in which these are intended to be applied, together with facilities which allow the user a complementary choice of aspects according to their personal and practical requirements.

In conclusion

The problems of generating and transferring knowledge between individuals, across organisations and from each generation to the next (through the education system) are substantial and complex. The quality gurus claim that around 25% of the resources of any organisation are devoted to producing waste, and that much of this is attributable to “lack of knowledge” or to “lack of attention”. The knowledge industries, as noted at the beginning of the article, are increasingly substantive employers in the developed economies. At present we are in the early stages of understanding the way in which the knowledge of organisations is identified, valued and distributed. The problems of organisational knowledge are, however, too large and too important to be left to chance in the future.

Appendix A

