

# Organisational Knowledge: Capturing its diversity and sharing its power

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## Abstract

The perspective of this paper is that knowledge is an organisation's most valuable resource. Yet capturing the diverse forms of knowledge in meaningful ways still remains an elusive exercise in government and private sectors in spite of the abundance of IT and KM specialists and information management systems. Even more problematic that knowledge capture is knowledge sharing. KM systems can store and move data around an organisation using very sophisticated software but sharing knowledge is a very different beast to simply transferring it from one repository to another or making it available in different forms and/or databases. This paper argues that organisational leadership from management is needed to create a knowledge sharing environment which not only utilises various knowledge sharing mechanisms, both formal and informal, but also enhances the capacity to create and sustain organisational expertise. The paper will present empirical research and other evidence from the policing and law enforcement sector to support this argument.

## Biography

*Geoff Dean* is Associate Professor in the School of Justice at the Faculty of Law. His areas of expertise, teaching specialisation and research are in police Knowledge Management, the cognitive psychology of investigative thinking, criminal and terrorism profiling, global organised crime and international policing. He is the principal author of *Knowledge Management in Policing and Law Enforcement: Foundations, Structures, Applications* published by Oxford University Press in the UK in 2007. Dr. Dean was principal Guest Editor of a Special Issue on 'Local Research Links to Global Policing' in *Police Practice and Research: An International Journal*, Vol 9, No.4 in 2008. His latest book, as principal author is *Organised Crime: Policing Illegal Business Entrepreneurialism* which is due for publication in late 2009 by Oxford University Press in the UK.

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## Introduction

Knowledge as organisational resource is the intellectual capital which represents collectively the experience and indeed, the distilled wisdom, of an organisation's staff. Hence, the critical issue in Knowledge Management (KM) is capturing and sharing the knowledge individuals possess with organisations. In spite of the fact the many organisations have invested heavily in infrastructure resources to construct knowledge management systems (KMS) to promote knowledge sharing as Yang and Wu (2008:1129) note. "However, many knowledge management systems have failed to facilitate knowledge sharing."

Capturing and sharing knowledge is particularly important in Emergency Management where environmental volatility is more often than not the order of the day. Small-scale incidents and events can turn into significant disasters in significantly contracted time scales. Such rapidly evolving mega-disasters are essential unpredictable and carry with them equally unpredictable social, economic and political consequences.

The need for a well thought out Knowledge Management policy and set of equally conceived practices can provide the necessary edge in effectively managing emergencies and natural disasters. Research by Dag, von Lubitz, Beakley, and Patricelli (2008) supports this view. They state:

Existing evidence indicates that the absence of uncompromised access to data, information, and pertinent knowledge (von Lubitz and Wickramasinghe, 2006a) at the ground, mid, and executive levels of the response effort was among the principal contributors to the series of failures in the management of the recent national and international 'mega-disasters' (see, for example, Cooper and Block, 2006; Brinkley, 2006).

In this presentation the role of KM within the Emergency Management domain will be examined primarily with regard to knowledge capture and sharing. Research studies and examples mainly in relation to the allied policing and law enforcement sector will be used to highlight the importance of organisational leadership in Emergency Management.

## Defining Knowledge

In the knowledge management literature when discussing what 'knowledge' is it is a common practice to refer to two definitions of knowledge - explicit and tacit knowledge (Luen and Al-Hawamdeh, 2001). Explicit knowledge is captured in the form of documents (e.g., organisational policies, procedures, and so forth). Tacit knowledge is implicit to individuals and based on experience. It is what goes on in their heads. Hence, it is personal, subjective, and experiential in nature through the daily practice of knowledge-in-use. Consequently, it is dynamic and fast changing as compared with documented or explicit knowledge.

Furthermore, it is frequently stress in the knowledge management literature the importance of knowledge as an organizational resource. Knowledge is the organization's intellectual capital and therefore capturing its value is paramount for the organisation's survival and growth.

However, what complicates the issue of defining knowledge management as a field of activity are the differences in Orientation to knowledge management. KM is a 'system of thought' that involves both a 'philosophy' and a 'practice'. More precisely, two different philosophical orientations (mechanistic and dynamic) to knowledge management as well as a set of distinct yet complementary processes in practice, mainly - knowledge creation & capture, storage & retrieval, transfer & sharing, application & integration (Dean and Gottschalk, 2007).

In relation to philosophical orientations, the business management community in general have a mechanistic understanding of KM as primarily an IS function. It is a 'Platform & Cable' approach to KM as I have dubbed it, which is good for business, but whether such a narrow conceptualisation is useful in the Emergency Management sector is a moot point.

The alternative view is a more dynamic philosophical perspective which I refer to as a 'Context & Culture' approach to KM. From this perspective, it is ignorantly presumptuous to think that

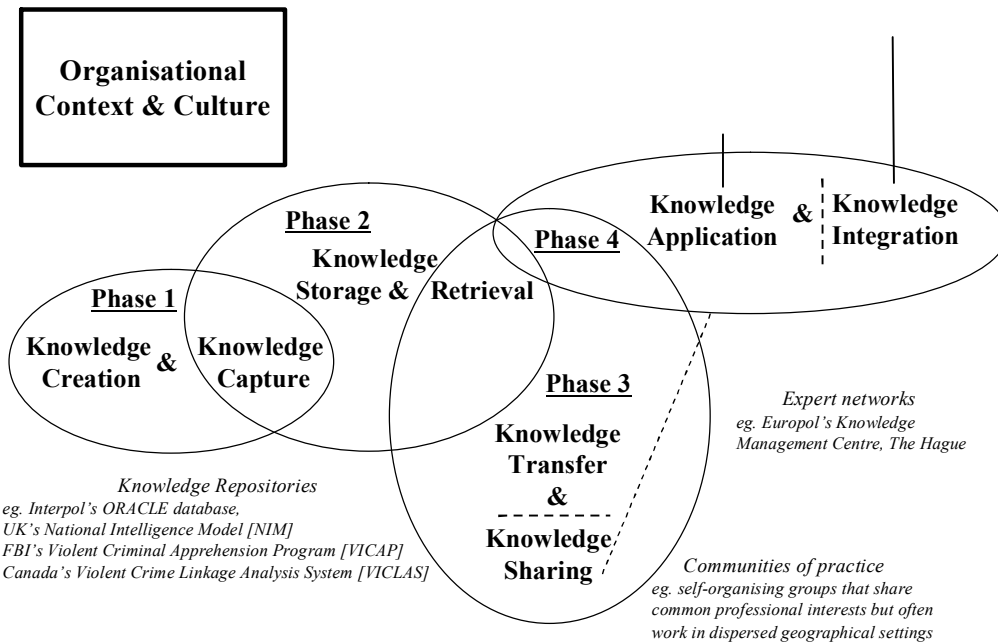
'knowledge' can be 'managed' like a sack of potatoes by moving information and data bits around in virtual reality. At best this is an impoverished notion of 'knowledge' and at worst is grossly arrogant. The only thing that realistically can be 'managed', and not without a great deal of difficulty, is the *context* and *culture* in which knowledge occurs. The notion of 'managing the context' in which knowledge evolves will be taken up later in the paper.

The argument being advanced here is not that one philosophical orientation or approach to KM is better than the other only that to have 'good sight' one needs both eyes to see with. Furthermore, it is clear that the KM market is dominated by the IS/IT industry to such an extent that public sector organisations are at risk of seeing out of only one eye and hence perceiving the value of KM as only residing in new and better 'platforms and cables', applications and software.

In relation to the practice dimension, KM relies on and revolved around a set of distinct complementary processes to do with knowledge creation, capture, storage, retrieval, transfer, sharing, application, and integration. In the original formulation of this systematic framework by Alavi and Leidner (2001) they listed four of these key processes, namely – knowledge creation (also referred to as construction), storage and retrieval, transfer, and application. Dean and Gottschalk (2007) expanded on this framework to include the additional processes of knowledge capture, sharing and integration.

While this framework gives a clear indication of what KM involves in practice such a list does not highlight the inter-relationships involved in these intertwined set of activities nor their significance when attempting to integrate a KM strategy across an organisation. In this regard, one way to usefully conceptualise this set of complementary KM processes is to depict them as involving four inter-related phases rather than in a linear sequence as shown in Figure 1 below.

**Figure 1: Phase Model of inter-related Processes of Knowledge Management**



The diagrammatic model above depicts this systematic framework of KM processes as a set of elliptical circles that interconnect and overlap at certain points with one another. The advantage of this depiction is that it allows the inter-relationships in and between these eight KM processes to become clearer so that implications can be drawn about how these processes interact in practice.

As can be seen each of the four phases contains a paired set of KM processes that logically relate together. For example, Phase 1 involves the paired set of *Knowledge Creation* and *Knowledge Capture* processes. This is because the ability to create knowledge is useless unless such knowledge is captured

by some process. Otherwise, such knowledge remains locked in someone's head and is not able to be used by anyone else. However once knowledge is captured it can be stored in some electronic form.

Hence, Phase 2 involves both *Knowledge Storage* and *Knowledge Retrieval* since once knowledge is stored in electronic form like in a database it can also be retrieved from the database by a similar process. Examples of a range of such police-related 'Knowledge Repositories' are listed on Figure 1.

So far so good as indicated by the broken-dotted-line-arrow from 'capture' to 'storage', but as can be seen on the diagram Phase 3 appears more problematic and is not a straightforward affair. *Knowledge Transfer* and *Knowledge Sharing* are located in Phase 3 and should in theory go together but in reality a disjunction can occur as indicated by the thicker-broken-dotted-line between 'transfer' and 'sharing'. Also, knowledge transfer is not necessarily the same thing as knowledge sharing although both processes have similar characteristics.

Knowledge can be transferred between individuals and groups and in a very limited sense this can be understood as having 'shared' such knowledge. However, the notion of knowledge sharing has a more active element than just passively moving knowledge around from one person to another. Knowledge sharing involves an active participation in attempting to understand another's knowledge and usually this takes place in a joint exchange of views in dialogue with another rather than simply distributing knowledge between people.

Hence, knowledge transfer is essentially about the distribution of information/knowledge whereas knowledge sharing is about the participation in understanding information/knowledge.

Some police examples are provided in Figure 1 (*expert networks* and *communities of practice*) which can relate to both knowledge transfer and sharing at various levels. That is, an *expert network* can act just as a distribution point for knowledge expertise (knowledge transfer) but may also include a participative element (knowledge sharing) if the referred expert becomes engaged in an ongoing dialogue with the requesting organisation. As indicated on Figure 1 this may become a sustained two-way engagement between the people concerned and can over time turn into more of a *community of practice* about particular policing issues.

Phase 4 is the final phase in which knowledge that has been either directly retrieved and applied or retrieved and transferred then applied and/or shared between people with an eventual applied outcome resulting. The three broken-dotted-line-arrows indicate these various pathways to *Knowledge Application*.

However, while knowledge application and knowledge integration can be logically related a similar situation arises as with knowledge transfer and knowledge sharing in that a disjunction can occur between the application of knowledge and its integration back into an organisation's context and culture as shown by the thicker-broken-dotted-line. For instance, applied knowledge can exist in organizational 'silos' and not find its way back into the wider organisation as indicated by the thick arrow from knowledge application to the box that contains the organisation's context and culture.

There can be many reasons for such a lack of knowledge integration within an organisation, but especially a police organisation. The range of specialist divisions and departments are such that they may not need-to-know about some knowledge applications that are not relevant to their specific areas of interest. Also, police deal in very sensitive information and in some cases the strategic nature of the intelligence is such that it can only be available to approved persons on a need-to-know basis. However, there are also situations where knowledge applications should be integrated more widely but where internal police politics sabotage any meaningful attempts to achieve even a minimum level of integration.

## **Knowledge in the Policing and Law Enforcement Sector**

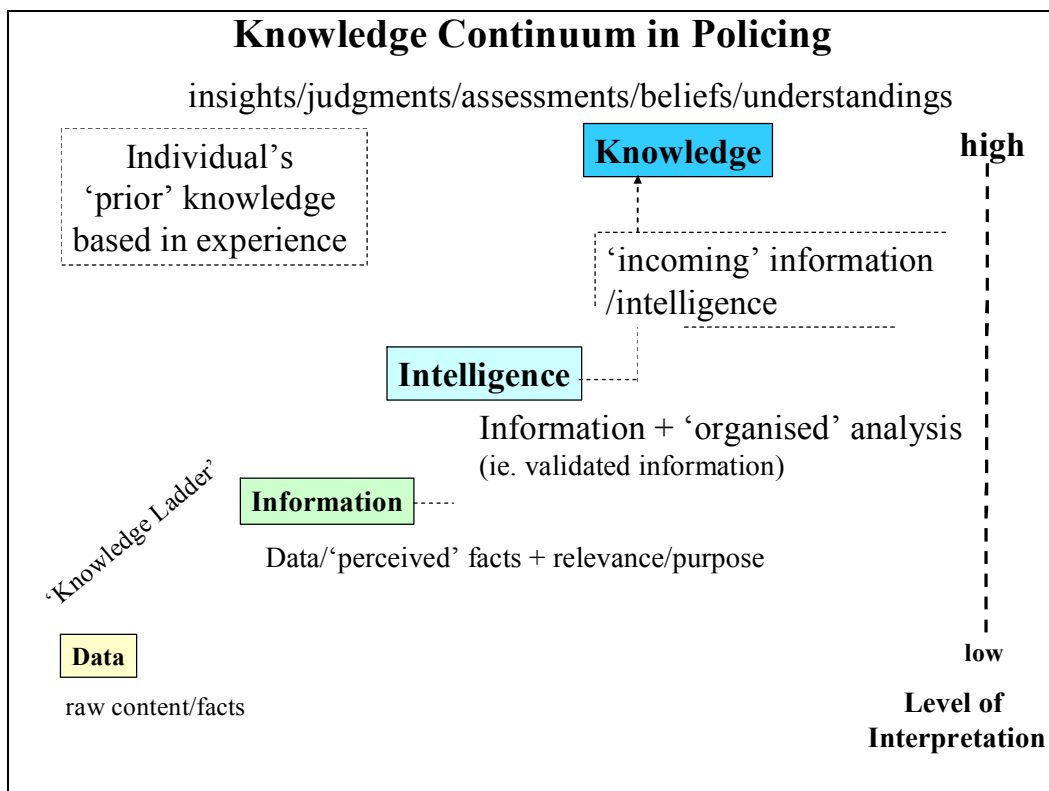
Another way to define knowledge that can be found in the knowledge management literature (Wiig, 2000; Barclay and Murray, 2000) is to conceive of knowledge as "... the most valuable form of content in a continuum starting at data, encompassing information, and ending at knowledge"(Gottschalk, 2005:59). A similar conception can be found in the Emergency Management literature. For example:

Ben Wisner in the 2005 World Report (IFRCRCS, 2005) suggest a hierarchical organisation of disaster communications that extends from *data* (basic unorganised facts), *information* (organised data), *knowledge* (understanding of information) and *wisdom* (choices based on understanding, experience and principle) (Marincioni, 2007).

However, with regard to the policing and law enforcement sector this 'knowledge ladder' conception requires some modification to include intelligence gathering as another form of content specific to this domain.

Therefore, Figure 2 below, extracted from Dean and Gottschalk (2007:5) illustrates this 'knowledge ladder' type continuum specifically adapted to policing where knowledge is presented as existing at the top end of a hierarchically arranged content continuum that includes 'intelligence' as a specific form of content that is highly relevant to police knowledge.

Figure 2: Hierarchy of Police Knowledge expressed as a Continuum



'Data' is considered the raw material out of which 'information' develops. As Drucker (1995) notes information is 'data endowed with relevance and purpose'. The same can be said about 'intelligence' in that it is a form of data to which some relevance has been attached through an attempt to offer an 'organised' analysis of the information received by a crime analyst and/or intelligence officer. Hence, this is why 'intelligence' is placed between information and knowledge on the above continuum as ideally intelligence represents as Brodeur and Dupont (2006:9) argue a form of 'validated information'.

'Information' and to a similar extent 'intelligence' then consists of facts and other data which is 'organised' to characterize or profile a particular situation, incident, or crime and the individual or group of individuals presumed to be involved. This 'organising' of the data to form meaningful information of necessity involves some level of 'interpretation' of the 'facts' as presented. However, the role of interpretation here in 'information' is relatively minor in comparison to its role in terms of 'knowledge' construction. In this regard, the role of interpretation in 'intelligence' is greater and more explicit than in 'information' but not as full blown as in the making of 'knowledge'.

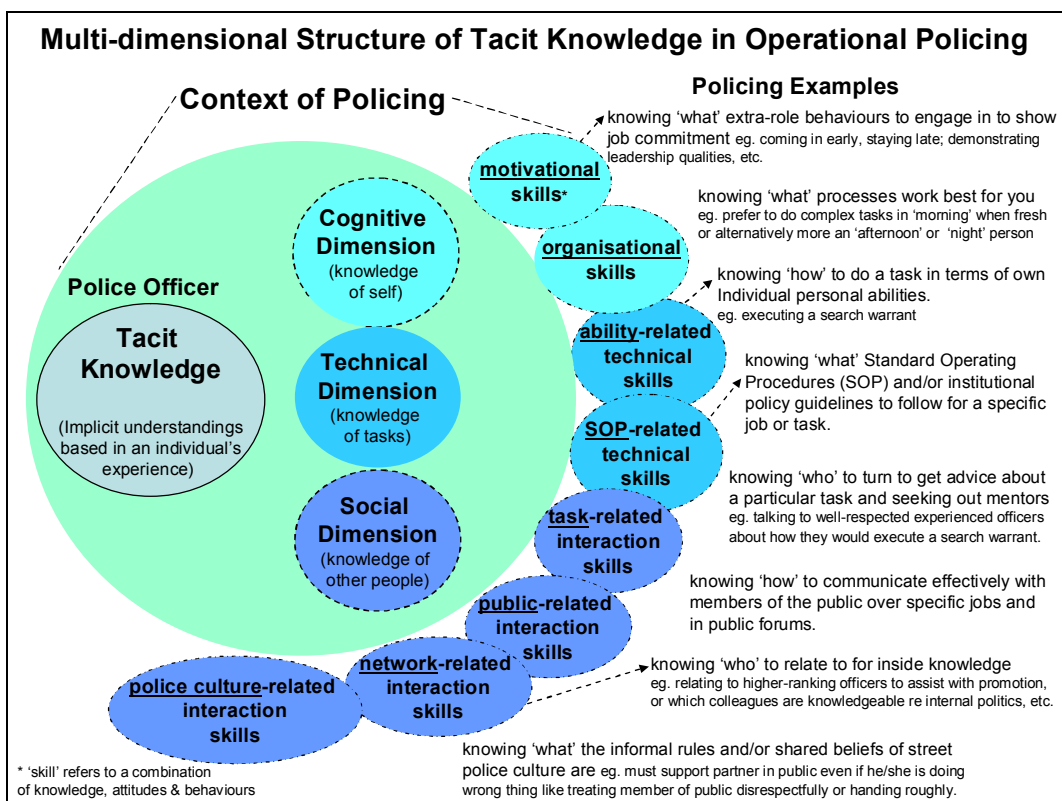
‘Knowledge’ as implied operates at a higher level of abstraction and consists of judgments and assessments based in personal beliefs, truths, and expectations about the ‘information’ received and how it is should be analysed, evaluated and synthesized - in short ‘interpreted’- so that it can be used and implemented into some form of action.

However, this process of creating knowledge by transforming ‘incoming information’ is more complex than this simple conceptualization of an unbroken ‘knowledge ladder’ allows for in reality. The accuracy and/or the abundance of information does not in itself guarantee success in a police or law enforcement investigation and/or operation. Rather how that information is ‘interpreted’ and hence turned into knowledge is the key consideration (Sutcliffe and Weber, 2003).

## Transforming Information into Knowledge

The interpretational activity of converting information into knowledge is a fundamentally transformative process that is both experiential and multi-dimensional in nature. Figure 3 below provides some understanding of the complex dimensional aspects of the tacit knowledge of individuals in relation to the knowledge work of police officers on the street.

Figure 3: Multi-Dimensional Police Knowledge



As can be seen Figure 3 depicts the multi-faceted structure of police work in relation to three main dimensions of an individual’s tacit knowledge - cognitive, technical, and social. Previous research in domains other than policing have found tacit knowledge to be a combination of these cognitive, technical and social dimensions (Leonard and Insch, 2005; Sternberg, Forsythe, Hedlund, Horvath, Wagner, Williams, Snook, and Grigorenko, 2000; Sternberg and Horvath, 1999; Sternberg, Wagner, Williams and Horvath, 1995; Sternberg, Wagner and Okagaki, 1993; Nonaka and Konno, 1998; Wagner and Sternberg, 1986; Nelson and Winter, 1982).

Figure 3 also breaks down each of three dimensions - cognitive, technical, and social - of a police officer’s tacit knowledge into a number of sub-sets of skills with relevant examples provided about what these various sets of skills can involve. This graphical depiction succinctly illustrates how wide-ranging and deep the ‘knowledge base’ of a police officer needs to be in order to effectively carry out their job and the diversity of duties and functions associated with it.

Given this understanding of street policing it is clearly evident that there is a rich complexity of experiential knowledge which can be accumulated by an operational police officer that by definition is tacit, multi-dimensional, and interpretational.

The graphics (figures 1, 2 and 3) presented so far underscore the point that 'knowledge' is a very slippery concept to capture let alone manage in an organisation.

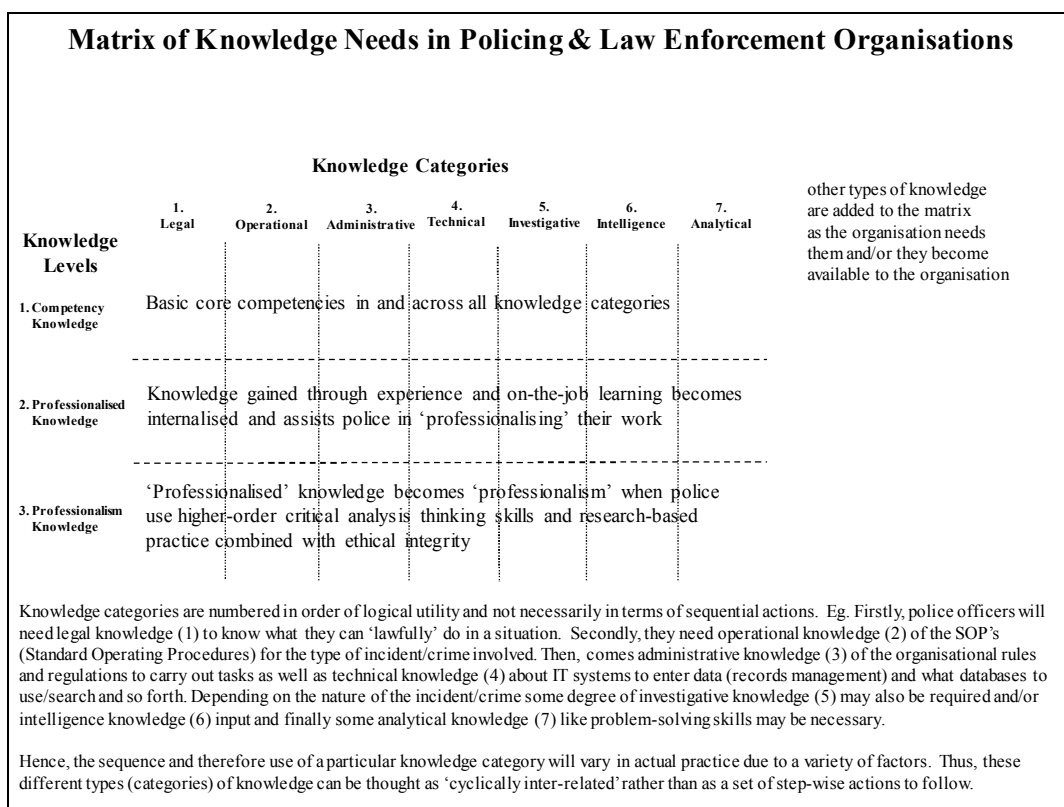
### Organisational Audit of Knowledge Needs

Before organisations can capture knowledge they need to know first of all what types of knowledge they have got, and to what extent or level such knowledge exists, in the organisational memory. To find this out organisations need to do a knowledge audit.

Conducting such a knowledge audit requires the different types of knowledge available in an organisation to be categorised. A tool used in this regard is a 'knowledge matrix' (Dean and Gottschalk, 2007), which is a table that lists knowledge needs by knowledge categories and knowledge levels.

The following Figure 4 is an example of such a knowledge matrix in relation to the police/law enforcement sector.

**Figure 4: Police 'Knowledge Needs' Matrix**



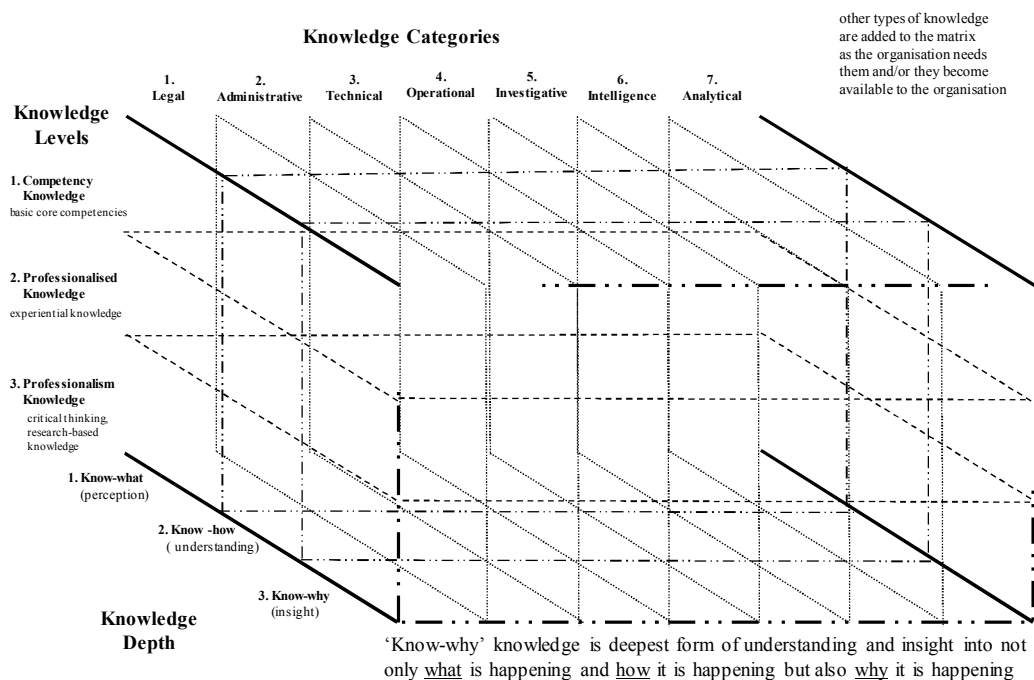
As is evident from an examination of figure 4 knowledge categories and levels intersect to form twenty-one boxes or containers of knowledge needs. The notes on this matrix are extensive and relatively self-explanatory and therefore will not be gone into in detail for this presentation.

The main point here is to show how it is possible to audit an organisation's knowledge needs through such a mapping exercise using a similar matrix type template.

There is a further consideration in relation to this mapping exercise and that has to do with capturing to some degree the depth of an individual's tacit knowledge which forms the collective pool of the intellectual capital of the organisation's knowledge resources.

The next Figure 5 illustrates the progressive deepening of knowledge as individual members of an organisation move from 'know-what', to 'know-how' and finally 'know-why' in their quest to understand a particular phenomenon.

**Figure 5: Knowledge Cube showing the depth dimension of Knowledge**



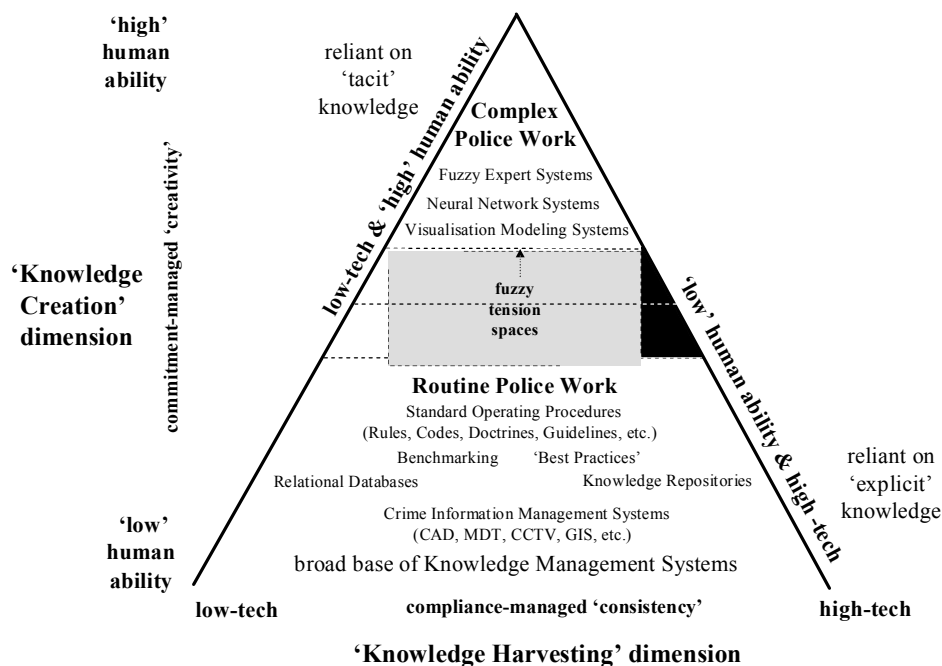
As is evident by adding a 'depth' dimension to the knowledge matrix of categories and levels a knowledge cube is created. This knowledge cube is a useful tool for organisational planning in order to comprehend the diversity and extent of the stock of knowledge, both explicit and tacit, which constitutes the organisation's knowledge assets.

Once, the knowledge needs of an organisation have been mapped there still remains two of the most daunting tasks KM faces - how to meaningfully capture this knowledge and then share it across the organisation.

### Capturing Knowledge: Creating and Harvesting Approaches

Figure 6 below has been extracted from Dean and Gottschalk (2007) and again is an example form the policing and law enforcement sector of the two types of approaches that organisations can adopt to capturing knowledge.

**Figure 6: Fuzzy Pyramid of Police Knowledge Management**



Knowledge has two dimensions in so far as capturing it for organisational use, as can be seen in Figure 6. That is, the dimensions of knowledge as represented along the horizontal (knowledge harvesting) and vertical (knowledge creation) axes of the KM pyramid. This pyramid is to remind organizations that Knowledge Management at a policy level is all about striking the correct balance between the dimensions of 'knowledge harvesting' and 'knowledge creation'.

'Knowledge harvesting' is where existing 'explicit' knowledge captured in an organisation's databases, information systems, knowledge repositories, best practices, 'lessons learnt' packages, and so forth is re-used and replicated to achieve pre-specified organisational goals and targets.

The 'Knowledge Harvesting' dimension is most closely associated with a managerial focus that seeks 'compliance' in order to minimise variance and hence produce a consistent result that is often pre-specified and pre-determined by some type of performance outcome indicator, target or measurement. Hence, organisational control is imperative for this type of compliance-based management. Again for routine police work this 'Command and Control' managerial style works up to a certain degree (the 'fuzziness' factor). However, beyond where that 'certain degree' may be drawn a 'command & control' compliance model becomes problematic for a Knowledge Management policy.

According to Malhotra (2004:3) *knowledge harvesting* is what passes for much of 'Knowledge Management' in most organisations. This knowledge harvesting approach to KM is easy to do for work that is routine and structured. It fits very comfortably with organisations that depend on rules and institutionalised procedures and work in predictable and stable environments.

'Knowledge creation' on the other hand is a much more active and dynamic concept that results from multi-level interactions between data, information, and intelligence combined with rules, procedures, best practices, lessons learnt and the like by individuals either working in groups or alone that show motivation, commitment and persistence to think innovatively in coming up with new ideas and ways to improve processes and/or solve problems. The critical point about *knowledge creation* is that its wellspring is in the mind of individuals (tacit knowledge) not technology. Hence, a knowledge creation approach is most suitable for work that is predominately non-routine and largely unstructured and where an organisation operates in unpredictable and dynamic environments.

The essential difference between these two dimensions is that *knowledge harvesting* depends on technology for processing routine, structured work in stable environments. Whereas *knowledge*

*creation* does not depend on technology but rather an individual's innovative thinking but uses technology to process non-routine, unstructured work in dynamic environments.

The type of managerial focus on the 'Knowledge Creation' dimension requires more a people-centered style by management in order to facilitate the construction of new organisational knowledge that is 'Commitment' based. As Malhotra (2004:11) notes "A key challenge for managers in the forthcoming turbulent environment will be cultivating *commitment* of knowledge workers to the organizational vision."

Creativity and innovative thinking flows from a motivated and committed workforce not one that is told to 'toe the line', 'don't rock the boat', 'keep your head down' and 'just do your job' or in other words be compliant. Viable KMS at the higher end of complex police work can only come about by police managers attending to the sense-making capabilities of their staff or as Butler and Gray (2006) put it adopting 'mindfulness-based approaches' to managing individuals (Sternberg, 2000). 'Mindfulness' refers to "... the ability to continuously create and use new categories in perception and interpretation of the world" (Langer, 1997:4).

Finally, as can be seen the sides of the fuzzy pyramid show '*low-tech & high human ability*' going up the left-hand side and '*low human ability & high-tech*' going down the other right-hand side of the pyramid.

The significance of this depiction is that for the 'Knowledge Creation' dimension to 'grow' in an organization it requires at a minimum of some 'low-tech' support and a lot of 'high' human ability in the form of motivation and commitment to kick-start innovative thinking.

The 'high' human ability factor can be either recognized individuals with some talent, experience or expertise in certain areas or a composite group of similarly endowed individuals. As is evident on Figure 6 at the 'high end' of human ability the reliance of an individual's or group of individuals' tacit knowledge is paramount.

From such a focused concentration of tacit knowledge then the base of 'Knowledge Management Systems' in policing and law enforcement can be expected to have some return on this investment in tacit knowledge with the development of innovative technological applications like those noted under complex police work area of Figure 6 and other emerging technologies (Snowden, 2006).

Conversely, for the 'Knowledge Harvesting' dimension to 'expand sideways' an organization need only to invest in a range of 'high-tech' applications that require 'little' human ability or involvement of tacit knowledge. To run these high-tech systems only requires training in the procedural documentation (explicit knowledge) relevant to the application.

The key point about this KM fuzzy pyramid is that management executives, not just police management, need to find the right management balance. That is, between maintaining a 'command & control' compliance model of management for routine work and at the same time, facilitate the movement towards a more commitment-centered, mindfulness-based management model for the majority of complex knowledge work.

## **Knowledge Sharing: Emergent and Engineering Approaches**

Knowledge is the intellectual capital of an organisation but for it to be fully realised individual members of the organization must be willing to share their knowledge (Berg, Dean, Gottschalk, and Karlsen, 2008). There are two key inter-related issues involved here – motivation and capacity. Firstly, organisational members need to be motivated and hence have a willingness to create and share knowledge. Secondly, organisational members need the capacity and hence the ability to create and share knowledge. Furthermore, technological advances continue to ensure there will be no shortage of innovative ways to share knowledge. For instance, there are many different knowledge-sharing mechanisms available be they informal and personal, or more formal and impersonal.

Informal knowledge sharing mechanisms can include:

- Talk (in person or by phone (eg. Skype, Gtalk etc.)
- Chatting via email or social network sites (eg. Face book, Hi5, etc.)

- unscheduled meetings
- electronic bulletin boards
- discussion databases

More formal knowledge sharing mechanisms can include:

- mentoring
- video conferencing
- training sessions
- organizational intranets
- databases (knowledge repositories)

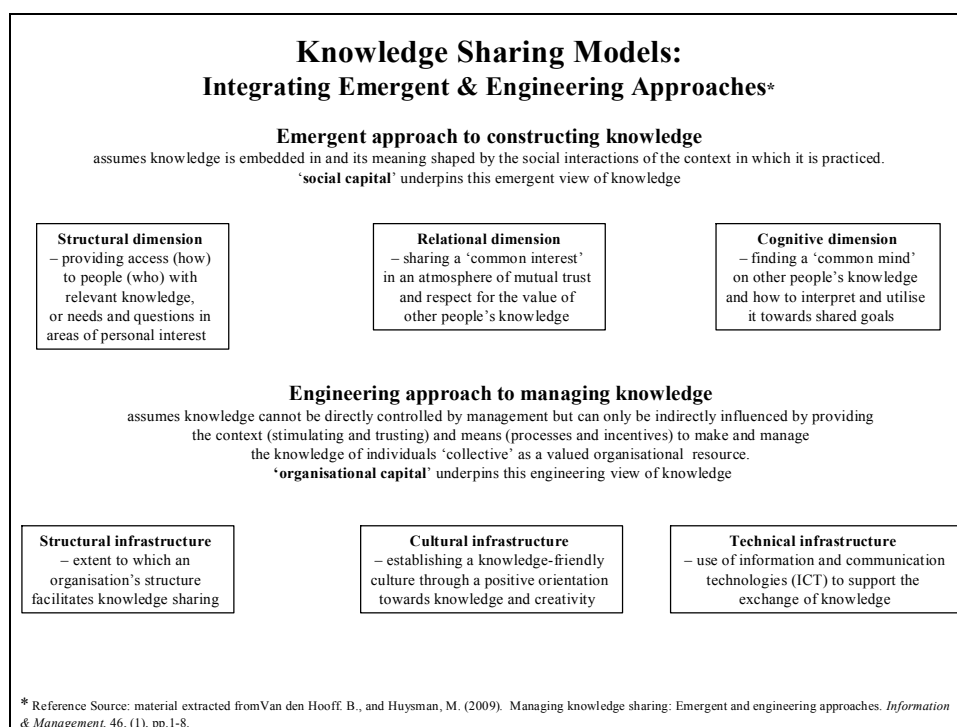
However, regardless of variety or inventiveness, sharing knowledge cannot be forced but comes about in a social context where individuals are motivated to share with each other their ideas and experiences. In this regard, van den Hooff and Huysman (2009:1) use the term an 'emergent approach' towards knowledge sharing. They argue that "knowledge sharing is not dependent on management intervention but on the social capital of a group of people."

Moreover, the implication for management of this emergent quality to knowledge sharing is "...the awareness that knowledge cannot be directed from the outside has pushed the role of the manager to the periphery of KM. Consequently, though knowledge sharing is crucial to an organization, it is inherently emergent in nature" van den Hooff and Huysman, (2009:1). This emergent approach to knowledge sharing is in alignment with the 'Context & Culture' philosophical orientation noted earlier in the paper.

However, there is an alternative approach to knowledge sharing, which van den Hooff and Huysman, (2009) define as the 'engineering approach'. This approach assumes that knowledge sharing can be managed. The key assumption here is that management while it cannot directly command knowledge sharing can nonetheless play an indirect role through creating a stimulating environment where people can share their knowledge.

Again, the overlap with the 'Context & Culture' orientation to KM is also evidence in this engineering approach whereby the more IT focused 'Platform & Cables' approach to KM plays a support role to the organisational context and culture rather than being the dominant orientation. Figure 7 below expands more on how these two approaches can act in an integrated way as compatible models for knowledge sharing.

**Figure 7: Models of Knowledge Sharing**



As can be seen, the notions of 'social capital' and 'organisational capital' and their associated dimensions are prominent concepts within this knowledge sharing framework. Moreover, van den Hooff and Huysman, (2009: 7) draw out the following observations from the findings of their research into these two approaches:

As for practical implications, our results indicated that management could indirectly promote knowledge sharing through the creation of an environment that fostered social capital by:

- creating an organizational structure that showed who was responsible for which knowledge activities and that had little formal barriers to interaction between different parts of the organization;
- establishing a knowledge-friendly culture with openness, innovativeness, a willingness to share, etc.;
- establishing and maintaining an IT infrastructure that efficiently and effectively helped organizational members to learn what is relevant knowledge, where it is located, and how to contact those possessing or needing it.

These research implications while derived from a study of predominately business domain also have currency in the Emergency Management sector. For example, Marincioni (2007) conducted a comparative survey of a diverse sample of 96 US and Italian emergency management agencies. His focus was to look at the fit between IT and knowledge sharing in Emergency Management sector. He found that new information technologies (IT) has transformed disaster communications by permitting access to and the dissemination of massive amounts of disaster information with unprecedented speed and efficiency.

However, the study also found "... barriers rooted in the various professional cultures still hinder the sharing of disaster knowledge" and hence he argues that "to be effective the available IT must be attuned to the unique settings and professional cultures of the local emergency management communities" (Marincioni (2007: 474). Such findings echo similar results by researchers across a broad range of organisations in both private and public sectors (van den Hooff and Huysman, 2009; Dag, von Lubitz, Beakley, and Patricelli, 2008; Jackson and Webster, 2007).

## Discussion

It is apparent from the previous sections of this presentation that capturing the tacit knowledge of experienced individuals and getting them to share it 'collectively' is a daunting task for any organization.

However, there are a several KM practices that offer some promise for managing the context and culture of knowledge acquisition and sharing. Examples of people-centered KM practices are things like establishing a *lessons-learned system* (King, Marks, McCoy, 2002), and establishing *communities of practice*.

These 'communities' are made of members who have a professional interest in some area who seek out others with similar interests and hence a self-organising type of group evolves over time. The links often begin in an informal manner and may become formalised at some point. However, what form such a 'community of practice' may take the really essential element is the richness and depth of the knowledge sharing that takes place in them. Organisations that explicitly encourage the development of such free-forming self-organising work-related communities of practice are investing in the future of KM and its as yet unrealised potentialities.

The problem such self-organising communities of practice present to organisations is exactly that – its free-forming self-organising nature. Police organisations, especially, have essentially a paramilitary structure and operate by necessity on a command and control basis. However, there would also be a number of organisations, particularly in the Emergency Management sector that also have a strong 'command and control' management bias.

The long term effect is that executive management find it hard to let go or free up this ingrained command and control mentality. They like to micro-manage everything. Such an attitude is counterproductive to establishing viable communities of practice in such organisations.

Recent research by Jackson and Webster (2007) offers some useful possibilities in addressing some of the problems of capturing tacit knowledge. They suggest using a *combination of elicitation and mapping methodologies* like "...business process modeling, the soft systems methodology, causal cognitive mapping and brainstorming..." (2007:50) to capture tacit, role-related and relationship knowledge from staff in organisations.

Leaving aside some of the other issues touched upon in this presentation associated with 'capturing' tacit knowledge, and assuming we can do so in meaningful ways then the issue of 'storing' such knowledge and in what form takes on prominence. Essentially, there are three significant problems linked with 'stored' tacit knowledge.

The first problem is that knowledge which individuals possess is always 'skewed'. Knowledge is context-dependent. That is, knowledge does not exist in a vacuum, it is conditioned and biased by the contexts in which it is collected, discussed, and used. Hence, stored knowledge systems like 'best practices', 'lessons learnt' systems and so forth are skewed by organizational assumptions that conditions individual thinking. Such conditioned thinking can reinforce entrenched folklore and cultural stereotyping that comes embedded in 'stored' knowledge. For instance, several researchers (Snowden, 2006; Weick and Sutcliffe, 2001; Kogut and Zander, 1992) have similar findings to what Brown and Brudney (2003:49) found in police agencies committed to a 'learning-organization' KM paradigm that ironically "...I & T systems may institutionalize old structures and perspectives" rather than advance knowledge.

The second problem with 'stored' tacit knowledge is that once stored it becomes 'static'. Hence, the richness of its utility is diminished to varying degrees depending of how it is used and for what purpose.

By definition 'tacit knowledge' is an active, dynamic, and richly joined 'composite' construct that depends on human ability operating in concert with various contexts to fully realise its potential as noted by several researchers (Churchman, 1971; Nonaka and Takeuchi 1995, Davenport and Prusak, 1998; Ruggles and Holthouse, 1999; Sternberg and Horvath, 1999; Sternberg, Wagner and Okagaki, 1993; Sternberg, 2000; Alavi and Leidner, 2002; Muller-Merbach, 2004; Leonard and Insch, 2005; Malhotra, 2004; Butler and Gray, 2006; Sastrowardoyo and Metcalfe, 2006).

Given the dynamic and multi-faceted nature of tacit knowledge it may be of little use to 'explicitly store' static representations of individual's tacit knowledge in databases and knowledge repositories because such a transfer changes the very thing about tacit knowledge - its dynamism - that makes it valuable. Stored knowledge loses the interactional edge.

The third problem with 'stored' tacit knowledge is its 'superficiality'. This superficiality is in part a function of the fact that people do not know how much they really know and so can only provide as much as the skill of the interviewer has in eliciting buried or 'deep' tacit knowledge from an individual. However, the larger problem of storing 'superficial' tacit knowledge comes about from the inherent difficulties associated with 'knowledge sharing'.

It is somewhat ironic that in a technological age full of sophisticated technologies for sharing information and knowledge across virtual realities in real time that Malhotra (2006:10) can so firmly assert, "...it will be almost impossible to ensure that accurate information is available for integration despite presence of *enabling* technologies that can facilitate such integration."

The basis of this uninspiring prediction is as Malhotra outlines lies in the paradoxical roles of collaboration and competition required by organizations of their employees. Malhotra states:

Often, individuals may not willingly share information with their departmental peers, supervisors, or with other departments, because they believe that what they know provides them with an inherent advantage in bargaining and negotiation. Despite availability of most sophisticated 'knowledge sharing' technologies, such human concerns may often result in sharing of partial, inaccurate, or ambiguous information. Even more critical than the absence of information is the propensity of sharing inaccurate or ambiguous information because of competing interests...(2006:10)

As the dictum goes ‘Knowledge is Power’. Nowhere is this more evident when someone is asked to ‘share’ their knowledge. In a review of the application of ‘intelligent’ knowledge in British policing, Collier (2006: 114) observes, “There remain many examples of tacit knowledge being held by police officer not being converted into explicit knowledge that is usable by NIM (*National Intelligence Model*) processes.” Yang and Wu (2008) in a study of knowledge sharing in organisations found similar reluctance to share knowledge because knowledge sharing involves a conflict of interest between individuals and work groups. In that, specific knowledge is a source of power and competitive advantage for people who own it an organisation. Consequently, “people who share their knowledge with others would lose their unique positions in organisations” (Yang and Wu, 2008:1129).

Given these *three problematic areas* associated with ‘stored’ tacit knowledge that is - its *skewed, static, and superficial nature* - it should be evident that how best to utilise the tacit knowledge of individuals must be of central concern to a knowledge management policy in the Emergency Management sector.

Furthermore, capturing the ‘deep’ tacit knowledge of individuals is only possible at the time of its occurrence. This is usually when a person is working on solving a problem, either individually or in a group context. It is at this point of occurrence that Knowledge Management Systems (KMS) can make their greatest contribution to capturing tacit knowledge by designing systems that the user ‘thinks through’ and ‘reasons with’ to solve a problem.

This is precisely the type of research work I have been doing in relation to the Policing domain. The three applications (‘Cross+Check’ System: Experiential Knowledge Reasoning Application - Chapters 7; ‘Investigative Pathways’ System: Neural Network Mapping Application - Chapter 8; and ‘Interlocking Terrorism Contexts’ System: Knowledge Modelling Application - Chapter 9) presented in my book on *Knowledge Management in Policing and Law Enforcement: Foundations, Structures, Applications* (2007) are designed as ‘low-tech’ KMS thinking applications.

Some research in the disaster management literature which is more closely aligned to the Emergency Management domain shows promise in dealing with some of the issues of capturing, storing and sharing tacit knowledge. Research by von Lubitz, Beakley, and Patricelli (2008) demonstrates that advanced technological systems that employ network-centric operations and network-enabled capabilities combined with Boyd’s **OODA** (**O**bserve, **O**rient, **D**ecide, and **A**ct) Loop-based decision-making in unpredictable and dynamically changing environments can produce *actionable knowledge*. They describe ‘actionable knowledge’ as “... the operational space *at any time within its temporal evolution*” (2008: 565).

Such actionable knowledge happens in real time or close enough to real time as it relies on a parallel process of “...near-simultaneous extraction, processing, structuring, management, dissemination, and storage take place” (Lubitz, Beakley, and Patricelli (2008: 566). Clearly, the tacit knowledge of experienced emergency management staff is part of and/or can be inputted into this parallel process of knowledge construction. Thereby, at least in theory, assisting to overcome in large measure the skewed, static and superficiality of other forms of dealing with tacit knowledge capture, storage and sharing.

## **Conclusion**

The thrust of this paper has been to demonstrate through relevant research findings, case studies and examples from disciplines and sectors allied to the Emergency Management domain that organisational leadership from executive and middle management is a key driver behind the utilization of ‘Knowledge Management’ (KM) as an effective emergency management tool.

Forward-looking organisational leadership with regard to KM is necessary for two fundamental reasons. Firstly, to capture the diversity of the organisation’s collective knowledge. Secondly, to create an organisational context and culture that facilitates in meaningful ways the promotion of a knowledge sharing environment. Both of these aims cannot be achieved without sustained and enlightened management and executive leadership. The future outcome of such inspired leadership will strategically locate the organisation with the necessary competitive edge to be in the best possible position to deal as effectively as it can with the unpredictabilities that will inevitably come over the horizon.

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