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Redefining Knowledge Management to Deliver Competitive Advantage

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The key message is the need to reinvent the word knowledge so that it can take us into the future, to understand that knowledge is not about know-ledge: what is known, or what has happened in the past. Knowledge as a concept requires definition or reinvention in terms of delivering New Market Values or expectations before Knowledge Management becomes another management fad or intellectual albatross, like the learning organization.

INTRODUCTION

The purpose of this paper is to irritate the reader – to introduce what was called a maggot in the 18th century: an irritating phrase or tune that just won't depart. The intention is to be provocative, to shake up some of the prevailing mindsets sheltering behind the still-damp label of Knowledge Management before it is too late and the fundamental nature and opportunity of knowledge and its potential for management and realization is lost.

THE CRISIS OF WEALTH CREATION AND THE FUTILITY OF OPTIMIZATION

Governments are struggling to meet growing expectations for higher living standards and to resolve the problem of funding social welfare and infrastructure systems to deliver virtually infinite capacity, now and in the future. At the same time, national economies are finding it difficult to generate the additional wealth required to meet the costs of these growing expectations.^[1]

The stable recipe for maintaining wealth has tended to be the optimization of products and processes. Recently, Steven Roach the high-priest of downsizing and hollowing-out corporations chose

to publicly recant, saying that such lean strategies were ultimately recipes for industrial extinction.^[2] Similarly, research at Cranfield reinforced the futility of the optimization model, connecting the loss of the ability to innovate with the adoption of a primary strategy of optimizing existing processes or products.^[3]

Roach's recantation hinted at downsizing and efficiency as a betrayal of workforces by management, a management that was unable to innovate and so chose to optimize. The danger of focusing on optimization of products and processes is that of changing the basis of competition from differentiated value to price, becoming the seller of capacity having lost the ability to deliver New Market Values and determine prices in the world market. The Japanese lean approach of optimization and their approach to R&D will not deliver the ability to create genuinely new products, in fact through supply-chain management, lean production acts as a brake on the potential rate of innovation by forcing its prisoners to compete on price and not on value.^[4, 5]

DELIVERING KNOWLEDGE LEADERSHIP

When Drucker began to talk about knowledge workers, he opened up the potential issue of how to deliver knowledge leadership within a new world knowledge economy where knowledge had the potential to become the new currency.^[6] At this point, the management of knowledge workers became a serious issue. But who are the knowledge workers? How will we recognize them? Are they everywhere? What we can surmise is that unlike librarians and travel-agents, they are a minority, possibly a very small minority, perhaps only 0.015% of the population.^[7]

If they are a small minority, they are probably differentiated by their creativity, which being intrinsically motivated makes them very difficult to manage conventionally.^[8] Another question includes the source of these knowledge workers;

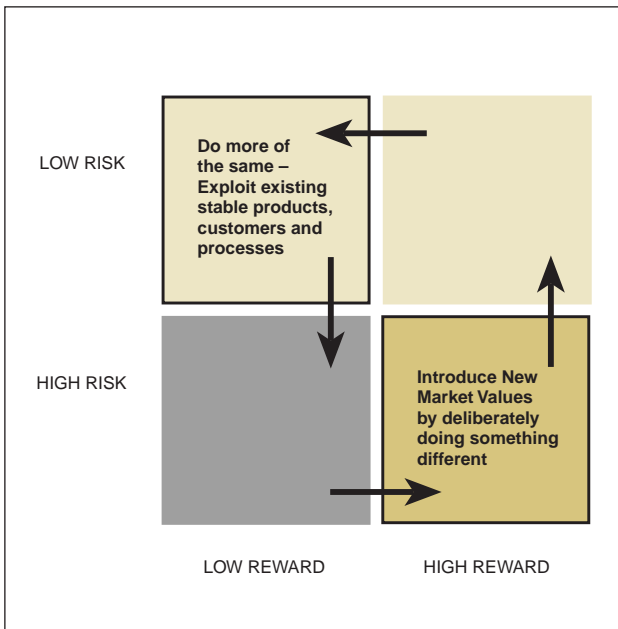


Figure 1: Risk and Reward Paradigm frame

where do they come from? If we return to the futility of the optimization paradigm in promoting innovation and New Market Values and consider the recent trend towards managing universities as lean education factories, the issue arises as to whether the factory-education mindset will be able to deliver the new knowledge workers who can deliver real innovations, instead of just optimizing existing products and processes as in Japan?

Perhaps the full implementation of lean education factory thinking will be complete when businesses in the West have fully abandoned lean in favour of customization to deliver high-value, low-volume, high variety products and processes. Ultimately, university education may become a slight disguise for custodial campuses delaying the release of employable workforces into a shrinking economy. If we consider the source of New Market Values in terms of individuals involved, it is interesting to note that within a small sample, including Bill Gates, Steve Jobs and Richard Branson, a common element seems to be their lack of interest in university education and their creative approach to business.

An approach to framing 'knowledge' is to examine the idea of knowledge and strategy. Arguably, there are only three strategies: to lead, to follow and to protect. A Risk and Reward Paradigm frame demonstrates a circulation effect connecting high and low risk and reward decisions as shown in Figure 1.

In effect, an organization can be tempted to occupy a low risk, low reward position, exploiting and protecting existing stable products, processes and

customers. This initially low-risk strategy evolves into high-risk strategy over time through competition driving the organization into selling capacity as a commodity. The organization can delay dropping out of the Paradigm Frame at this point by developing Key Account Management or partnership approaches to mask the decline in its product.^[10]

Alternatively, the organization can face its crisis and choose to move into introducing New Market Values by deliberately choosing to innovate through doing something different which initially is high-risk, with potentially high reward. In time, this high-risk and reward strategy stabilizes by having introduced a market standard which can become a low risk and has the potential for increasing as opposed to diminishing returns. At which point, competitors enter and copy, and the cycle begins again. The basis of this kind of thinking, knowledge leadership is illustrated within a variation of the Johari window in Figure 2.

In this modified Johari window, knowledge leadership exists in terms of that which is *known* which has a potentially high strategic impact and is known only to your organization. What is public domain or known to others but has high strategic impact requires co-operation, if only to manage the timing of its impact; and that which is of low strategic impact and only known to you can be shared or exchanged (possibly with academics). Taking both diagrams in combination, the competitive and time-based nature of knowledge leadership becomes evident. In effect a CEO's responsibility is to be continually aware of the state of knowledge leadership within the organization and continually evaluating the organization's inventory of knowledge with the potential to deliver market leadership, readiness to exploit it, timing for release and potential lead-time before a competitor reverse-engineers the product or process.

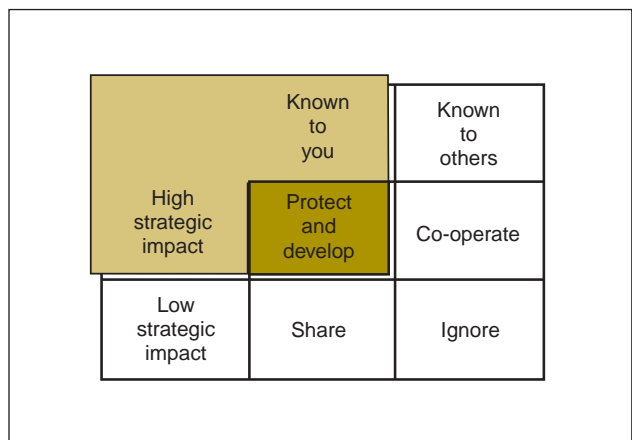


Figure 2: Knowledge leadership Johari window

LANGUAGE AND LIMITATIONS

When we consider the problem of the knowledge worker in terms of delivering innovative products and processes, the word *knowledge* increasingly becomes detached from its etymological base of knowing things, or being knowledgeable, or having a good memory, or knowing secrets that grant political power. The question of definition becomes important. It is impossible to detach the meaning of words from their context and from their purpose. It is this problem of language, context and purpose that determines the limitations of current thinking about knowledge and its management.

There is an apocryphal tale concerning the Chinese Civil Service entrance examination in the time of the Ming Emperors. Apparently candidates were given a room containing a chair, table, writing implements and materials and directed to write down everything they *knew*. It was not unknown for candidates to starve to death in the process. The content of the past is not really the form of knowledge that will help us to compete.

Benjamin Whorf demonstrated that the Eskimos have dozens of words to describe snow. Whilst Whorf's theory was that language determines or strongly influences thinking, it is more probable that language users develop highly differentiated terms to describe aspects of their environment when such special language is necessary in order to survive within a hostile environment.^[12] In other words, for those of us who only see snow in winter and can remain insulated within heated, four-wheel drive vehicles, 'snow' remains a static, blanket term. Whereas arctic warfare specialist tend to approach the specialized, differentiated jargon of the Eskimo with dozens of precise terms needed to be understood in a time dimension, because to misunderstand the state of snow as it was, as it is, and as it is going to be, within a continuum of 'snow' is essential. To get it wrong meant you were dead. Essentially, we can use a non-specific term like 'knowledge' because at the moment it is not important.

A brief overview of prevailing Knowledge Management mindsets indicates at least four themes selling old products under a large banner of modernity. In other words, like all modern fads, the consumer is conditioned to believe that the future can only be reached through consumption of this product which is being exploited as a kind of open brand containing many products and services.

1. *Holistic Groupware*. This involves networked computers to access expertise and databases across an organization – to conduct dialogues and can include 'smart' software.

2. *Financial*. The consideration of intellectual property within the balance-sheet – this can include the value of databases.
3. *Human Resource*. This is tending to allow the explicit return of viewing people as commodities in terms of what is described as tacit or explicit knowledge. In other words, what people know makes them an asset. HR people are confused by not understanding how people learn, how little their repertoires can be influenced and an uncritical assumption that individuals have infinite learning capacity.
4. *Knowledge-Based/Expert Systems*. This is seen as knowledge, but is purely a thin disguise for a convergent data patterning system that enables a data-search to connect with a restricted repertoire of old decisions.

These approaches are confused through the involvement of computers as a redemptive, modern technology based around old content thinking about past events. However, something interesting is happening. We are beginning to see a shift in focus from content to process-thinking, and we also have to come to terms with the possibility that if we are thinking about knowledge for competitive advantage, we have to shift from thinking about knowledge in terms of the past and begin to think about knowledge in terms of the future. This future process-thinking is very difficult to do if trained in the traditional academic model of research, and if individuals continue to think that knowledge is something that is put into boxes.

THE DIKT LEARNING PROCESS

So far, the competitive nature of knowledge in terms of value and time shows us that knowledge is not a static commodity, and its value lies in its exploitation to deliver New Market Values or expectations by destabilizing existing positions of competitive products in terms of entry to market and relative value. Similarly, as Peter Drucker observed, it is too easy to confuse data with knowledge and information technology with information.^[13] If de Geus was right, and the only true competitive advantage lies in ability to learn *faster* than the competition, then the nature and relationship of certain key words including knowledge, technology, data and information needs to be understood.^[14]

Figure 3 connects these words within a transitional process. Let's begin by looking at the first transition between data and information, perhaps the most fundamental transition and certainly the most difficult to manage within the DIKT learning

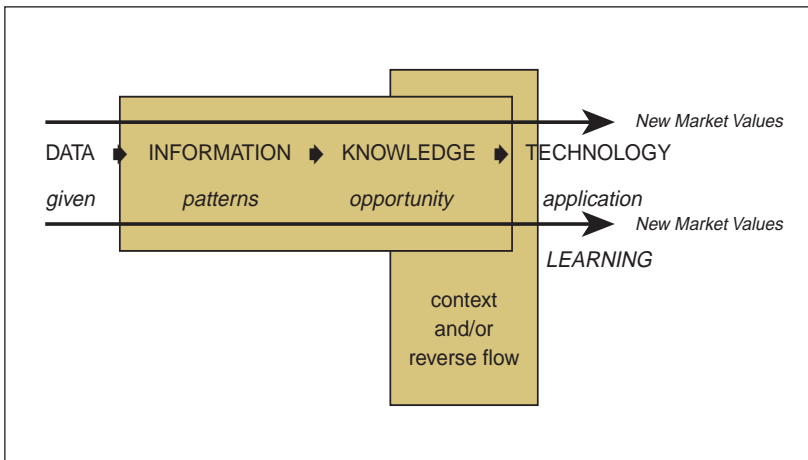


Figure 3: The DIKT learning process

process.^[15] In essence, data exists in infinite volume and variety, but its transition into information remains problematical, as anyone knows who has attempted to teach Statistical Process Control to either senior executives or shopfloor operatives. This transition is difficult because we confuse data and information. Within the media and everyday business, they tend to be treated as the same thing. This means that we have professors of information technology who are really professors of data technology.

We confuse the meaning of the word 'information' with being informed. Similar confusion exists in articles about 'information overload' stresses being caused through the Internet.^[16] The overload stress that is being discussed is due to the difficulty individuals have in processing the variable-quality data available on the Internet and turning it into usable information. In other words, we don't have time to make sense of it all and therein lies the clue as to the meaning of information. Information only exists when we can either see or create patterns or structures within the field of data. This information is highly contextual and defined by the means of collection, the media of presentation and the purpose involved.

The next transition from information to knowledge is defined by an approach that begins with the context of what is known about the past and with a style of thinking about the future as a process that identifies opportunities for delivering New Market Values. This transition involves a creative technique that takes an existing pattern or structure in an existing form of thinking and locates that pattern within a new, contrasting context or deliberately reverses its flow or direction.

Useful examples include the development of the Stealth fighter technology from a dense, Russian technical paper that predicted how to calculate

geometric configurations to control electromagnetic reflections. A Lockheed mathematician read the paper to its end and realized that translating this thinking to the defensive radar-systems context meant that the apparent size of an object could be reduced by manipulating the shape of the attacking aircraft.^[17] Another example includes Richard Branson's approach to attacking markets by reversing the conventional logic that says avoid highly-developed markets with virtual cartel management where the costs of entry are high. Branson realized that over time,

new niche customers are always emerging within such a stable market and if this group is targeted through New Market Values, the existing stable cartels can be destabilized and profitable fragments can be picked off.

Two interesting examples of future knowledge as opportunities that are currently under development include the use of Product Data Management systems out of their original engineering context and the application of Supply-Chain methodologies out of their original automotive context and with a reversal of original direction away from supplier to customer.

Financial services organizations are working on developing Product Data Management systems to allow the decomposition of product features across a range of existing offerings to create new product offerings specifically customized to offer novel combinations that meet evolving customer expectations. Similarly, the reversal of Supply-Chain Management Technology through 180 degrees to create a new approach which can be tentatively described as Customer Portfolio Management. Customer Portfolio Management is about reversing the tendency of Supply-Chain Management strategies to commoditize supplier products, sub-assemblies or processes by adopting the perspective of the supplier to quantify the risk, devaluation of value, the farming of profit, and the requirement to develop strategies that lead to a more balanced portfolio of customers.

The final, difficult stage of the process is the exploitation of knowledge as an opportunity within the form of an application or a technology. This final phase involves the organization in developing stable processes and a culture that is the product of learning to overcome a series of crises to stabilize the technology that delivers the products that create new expectations in the market. The DIKT learning

process is time and value-based. Over a period of time, the leading technology introduces the new standard, this becomes an opportunity or form of knowledge for emulators, which over time becomes information as the patterns become obvious and finally it becomes public domain and taught in universities.

Creativity is essential to this process: creativity to adopt new perspectives in order to recognize or create new patterns, creativity to play and reverse these patterns within contrasting contexts, and finally creativity to manage the process of learning through anticipating and solving the problems of implementing the technology in a stable form. But this creativity requires creative people with different approaches to their creativity.

THE INNOVATING STEREOTYPES

Unfortunately, creativity is very largely intrinsically motivated, whether involved in optimizing to improve performance or innovating to create new expectations. If we understand the largely intrinsic nature of motivation behind creative behaviour and if we connect this understanding or information with the DIKT learning process, then it becomes essential to understand the nature of these 'Innovating Stereotypes' which combine to deliver new technologies.^[18]

Over a period of years, an intriguing and misleading statistic of 80% has been ascribed to the failure-rate of systematic change programmes.^[19] It is noticeable that the content of serious books about implementing change in organizations is largely taken up with how to manage project programmes or concurrent projects.^[20] Why is this? The Innovating Stereotypes were developed to explain this problem of failure and repetitive presentation of information on how to implement.

The Innovating Stereotypes consist of three essential stereotypical behaviours that are essential for organizations to continue to innovate. The model does not suggest that there are three discrete populations, but that individuals have different predispositions toward all three crude behaviours. The Innovating Stereotypes can loosely be described as populations who must interact to deliver successful innovating performance. These populations are described as Creators, Implementors and Stabilizers.

Creators introduce ideas that create instability within the organization, Implementors develop these ideas into workable systems and Stabilizers manage that system to optimize and reduce process variation. At this point, one can see that lean production/optimization is very much a Stabilizer

Technology. Unfortunately, Stabilizers tend to end up running the business and because of their Stabilizer-orientation, they tend to drive the sources of instability (both useful and damaging) out of the business. Similarly Stabilizers tend to reinforce the existing formula for business success. Once the Creators have been expelled by the Stabilizers, the Implementors lose their purpose and are left with only two choices: either to become pseudo-stabilizers or to join consultancies.

A useful illustration of the model and the interactions of the stereotypes lies behind the story of the arrival of Graphical User Interface technology pioneered by Xerox's Palo Alto Research Center, and delivered by Steve Jobs of Apple.^[21] Xerox set up its Computer Systems Laboratory, as insurance against the paperless office, under Bob Taylor who filled his flat organization with Creators whose only task was to come up with new ideas and turn them into stable prototypes. Unfortunately, Taylor's introverted Creators found it impossible to translate their technologies into the world of the Xerox Stabilizer executives.

In December 1979, Steve Jobs attended a demonstration and recognized the opportunity that the prototypical Graphical User Interface technology offered. He had a context for application and a hunger to deliver a stable, customer-friendly technology. Jobs demanded another demonstration and returned with the Apple programming team. Apparently within one hour, Jobs' team understood the implications of the technology and within another hour had spotted the mistakes and suggested improvement. Jobs was lucky to see the CSL PARC demonstration developed by the Xerox Creators, whose technology was a stable prototype. Jobs came along and acted as Implementor developing GUI as an Implementor Technology via LISA (the 16-bit microprocessor, bit-mapped display, a mouse for controlling the on-screen cursor and a keyboard that was separate from the main computer-box). LISA failed, but was itself an Implementor prototype that led to the stabilized technology that enabled the Apple Macintosh that introduced the new standard in computing by delivering New Market Values.

Jobs' success lay in his ability to bridge the gap between Creators and Stabilizers. All three stereotypes are interdependent. Between the future thinking of the Creator (what could be), sits the now-thinking of the Implementor (how to make it happen, now) and the Stabilizer's measurement of today's performance in terms of the past. The explanation for the high failure-rate of systemic change programmes lies in the Stabilizer's role in commissioning the change programme. Being a Stabilizer, the future can only be imagined in terms of the past. Stabilizers will always be disappointed

with their purchase of change because they want something they cannot have: which is change without change. Having driven their own source of change out of their business in order to optimize it, they attempt to purchase a step-change technology that contradicts their existing culture and the pain of attempting and failing to change is traumatic.

The explanation of the high content of serious change literature being identical lies in the inability of Stabilizers to absorb the lessons from change programmes since these imply continual instability. A contributor is the expulsion of Implementors who burnt their political bridges in fighting to implement the unsatisfactory change programme and have to leave the Stabilizer-dominated organization, or have realized their Implementor nature. These change books are popular with Stabilizers because they remain data, and are not translated into information of knowledge in the form of opportunities. In other words, Stabilizers cannot learn how to change which means that they have to outsource their Implementors through consultancies.

IMPLICATIONS

Firstly, beware the optimization paradigm trap. This leads to commoditization that will kill the organization, whatever the market is, be it commercial or educational.

Secondly, understand how to develop and manage the Innovating Stereotypes. Understand that managing diversity is not about race, gender, sexual orientation, age or height, but about understanding these stereotypes, their limitations, their different creative behaviours and managing their interactions.

Finally, remember that the ability to create knowledge about the future and learning to implement it quickly in the form of a technology is the core organizational competence. A fundamental step toward this future process thinking is to demonstrate purpose by introducing purpose-correct language into the organization through applying DIKT thinking and consistent use of DIKT terms. □

References

- [1] Chaharbhagi, K., Newman, V., "The Crisis of Wealth Creation," *Management Decision*, Vol. 35, No. 9, October 1997.
- [2] Roach, S. S., "A New Competitive Dilemma," *The Global Borrowers and Investors' Forum*, Euromoney Conference, London, 18 June 1996.
- [3] Madgwick, S., *Overcoming Barriers to Manufacturing Improvement*, SIMS, Cranfield University, Unpublished PhD Thesis, 1996.
- [4] Herbig, P. A., Palumbo, F. A., "Innovation – Japanese Style," *Industrial Management & Data Systems*, Vol. 5, 1996.
- [5] Kondo, Yoshio, "Creativity in Daily Work," *Human Systems Management*, Vol. 9, 1990.
- [6] Drucker, P., *The Frontiers of Management*, Heinemann, London, 1987.
- [7] Cringely, R. X., *Accidental Empires*, Penguin, Harmondsworth, 1996.
- [8] Amabile, T. M., *The Social Psychology of Creativity*, Springer-Verlag, New York, 1983.
- [9] Newman, V., "Unwrapping the Scenario Planning Strategy Development Tool: An Introduction to Why, What and How," *Implementing Scenario Planning Conference*, IIR Limited, 25 November 1996.
- [10] Millman, A., "The Emerging Concept of Relationship Marketing," *Ninth Industrial Marketing and Purchasing Conference*, University of Bath, 1993.
- [11] Newman, V., Chaharbaghi, K., "Strategic Alliances in Fast-Moving Markets," *Long Range Planning*, January 1997.
- [12] Whorf, B. L., *Language, Thought and Reality*, MIT Press, Cambridge, MA, USA, 1956.
- [13] Drucker, P. F., "The New Productivity Challenge," *Harvard Business Review*, November-December 1991, pp. 69-79.
- [14] de Geus, A., "Planning as Learning," *Harvard Business Review*, March-April 1988, pp. 70-74.
- [15] *op.cit.* Chaharbaghi, K., Newman, V., [1], p. 9.
- [16] Clark, S., "Stop The World," *Sunday Times Magazine*, 3 August 1997.
- [17] Rich, B. R., Janos, L., *Skunk Works*, Warner, London, 1994.
- [18] Chaharbaghi, K., Newman, V., "Innovating: Towards an Integrated Learning Model," *Management Decision*, Vol. 34, No. 4, 1996.
- [19] Jackson, S., *Development of a Self-Assessment Model of Organization Readiness for Business Process Reengineering*, SIMS, Cranfield University, Unpublished PhD Thesis, 1997.
- [20] Newman, V., "Developing Learning Teams to Unlock the Creativity within your Organisation," *Rocky Mountain Quality Conference*, 10 June 1996.
- [21] *op. cit.* Cringely, R. X., pp. 189-199.

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