# Using Scenarios to Explore the Potential for Shifts in the Relative Priority of Human, Structural and Relational Capital in Generating Value

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Abstract: Collaborative research over a two year period involving eighteen knowledge management practitioners and a team of academics explored the evolution of a next generation knowledge management agenda. Three scenarios were developed that explored the implications of two dimensions: firstly the underpinning organisational purpose in relation to the factors of production in both an industrial and a knowledge economy paradigm, and secondly the consequences of a predominantly transactional or relational psychological contract between individuals and organisations. By studying the drivers shaping the dynamic evolution of each scenario, we identified that organisations need to pay different levels of attention to the components of structural, human and relational capital in order to optimise value generation in each scenario. The first scenario looks at the natural evolution of the industrial economy paradigm as the pace of change accelerates and the expansion of the competitive environment increases the need for product innovation. The stimulus for this innovation is the quality and motivation of the people employed. Human capital management is the main lever to optimise organisational performance in this scenario. The next two scenarios look at organisations operating in the knowledge economy paradigm. One considers the consequences of continuing with the conventional psychological contract with employees based on a transactional exchange of money for time. A large investment is needed in the structural capital mechanisms to manage the organisational ownership of knowledge and to monitor and stimulate performance in delivering knowledge-based services. In the other scenario, the focus shifted to a situation where individuals and organisations negotiate common areas of interest before becoming involved together in something approaching a partnership. Learning and competitive agility emerge from networks of individuals and groups coalescing around shared objectives. Relationship capital becomes the basis of value generation.

Keywords: knowledge management, scenarios, intellectual capital, knowledge economy, psychological contract

## 1. Introduction

Organisations first started to focus on knowledge as a crucial resource around twenty years ago (Barney 1986, Dierickx and Cool 1989). Managing knowledge as a field of business practice evolved within Industrial Economy mindsets. Yet the economics of knowledge resources are fundamentally different from those of tangible resources where asset ownership confers power by controlling supply and demand (Toffler 1990, Grant 2002, Spender 2002, von Krogh and Grand 2002). Although knowledge supply is virtually infinite, ownership is never exclusive.

As a result of a period of intense social, political and technological changes in recent years, organisations now need to relate more proactively and constructively to stakeholders outside the boundaries of the firm. This requires more than pushing knowledge from the organisation to the outside world (Tapscott and Williams 2006), rather organisations need to engage in meaningful dialogue about areas of mutual interest with customers, suppliers, partners and competitors. Learning, collaboration and innovation through participation in a multifaceted "Value Universe" (Allee 2000, Carillo 2006) have become key drivers of performance. In an intensely interconnected world, an organisation's ability to satisfy the values of its stakeholders affects its reputation, and reputation is an attractor for the critical knowledge relationships an organisation increasingly requires. There are new challenges for organisations heavily reliant on intangible resources for value generation and with potentially conflicting needs of diverse stakeholders.

The research presented in this paper was undertaken to explore the proposition that to adapt successfully to the changing world, organisations, individuals and societies must transform the way they manage knowledge. This has implications for the priorities of knowledge managers responsible for developing and sustaining intellectual capital.

# 2. The shifting role of intellectual capital

In the industrial economy, capital in the form of money is the basis for acquiring the key inputs of physical materials. The outputs are goods and increasing wealth. Efficient production, with minimum waste of limited resources, has been assumed to be a major economic contribution of the firm to society. As we move into an economy where knowledge is a more significant factor of production (Grant 2002, Burton-Jones 1999), key inputs are intangible (digital resources, technological knowledge, brands, reputation) and valued outputs include stand alone services, or services that amplify the worth of tangible goods. Recognising the influence of diverse stakeholders requires the definition of worth to evolve from a purely monetary basis to include societal contribution in a broader sense (Andriessen 2003). The balanced scorecard (Kaplan and Norton 1992) has become a widely accepted method for taking a broad perspective on organizational performance to support better decision-making.

With the evolution of the knowledge economy, the intangible assets of the firm (in particular its intellectual capital) now account for a significant proportion of stock market valuations, though the perception of potential return on assets is fragile and the valuations are vulnerable to rapid fluctuations. A variety of approaches has emerged for valuing intellectual capital, ranging from those which try to place financial valuations on either specific components or on their overall contribution to the perceived value of the company, to scorecard methods which allow trends to be monitored without necessarily attempting exact financial calculations. Scorecard methods provide the basis for monitoring current performance and learning to adapt for the future, as well as communicating with external stakeholders (Sveiby 2001b). Examples of scorecards include the Skandia Navigator<sup>TM</sup> (Edvinsson 1997) and the Intangible Assets Monitor (Sveiby 1997).

The authors of scorecards define the components of intellectual capital in subtly different ways, though the three core components are consistently human capital, structural and relational capital. The definitions adopted in this paper are slight modifications of those used by Sveiby (2002). The term human capital encompasses all the employees of, and individuals available to work for, the organization. This defines knowledge workers in very broad terms and recognises the potential contribution from employees with a variety of forms of practical and intellectual expertise, as well as a variety of forms of contractual relationships. We also extend relational capital to encompass all the external players in the industry (customers, suppliers, strategic partners, key members of the industry, regulators etc.). This is in line with thinking about the extent of an organization's "value net" (Allee 2000, Nalebuff and Brandenburger 1997). The term structural capital describes the systems, processes, culture and other mechanisms for capturing and coordinating the knowledge available within the formal boundaries of the organization.

First generation knowledge management focussed on attempting to capture explicit knowledge in IT systems. This effectively viewed the purpose of knowledge management as the conversion of human capital to structural capital and was based on the metaphors and assumptions of proprietary ownership derived from the industrial economy. Second generation knowledge management acknowledged the greater value of tacit knowledge so shifted priorities to improving the flow of knowledge to the point of need and learning the lessons from the past (Sveiby 2001a). Thus knowledge management priorities encompassed a more dynamic balance between human and structural capital components. Third generation knowledge management (McKenzie et al. 2007a) is evolving to incorporate the full potential of the organisation's network of external connections, placing ever more emphasis on integrating relational capital in new and creative ways to enhance human and structural capital.

If organisations are to adopt a post-industrial philosophy and adapt to the demands of knowledge economy, then it is worth considering how they might get from where they are now to this more integrated position. Exploring possible ways the future might unfold and the implications for how third generation knowledge management could evolve is the subject of the research described in this paper.

#### 3. Research method

Scenario planning is one way to explore possible futures (Shwartz 1991). To this end, the Henley Knowledge Management Forum conducted an interactive collaborative research study (van Winkelen and Truch 2002) to explore the scope and shape of third generation KM activity. The project drew on

the expertise of twenty individuals, working together in a community of inquiry (van Winkelen et al. 2008). Two core researchers and 18 senior KM practitioners from a wide variety of large private and public sector organisations participated in ten half-day workshops between September 2006 and January 2008. They followed a structured process, guided by the academics and informed by expert input at key stages. These workshops focused on understanding the forces shaping future scenarios (Shwartz 1991). Project members conducted a macro-environmental analysis (Fahey and Narayanan 1986) then constructed three coherent scenarios using a process of appreciative inquiry (Cooperrider and Srivastva 1987) enhanced by visual and artistic stimuli. Literature sources were then used to develop understanding of the issues identified through the scenario planning process, to look for examples of how these are currently enacted and to relate them to trend studies carried out elsewhere.

# 4. The interface between individual and organisation affects knowledge value generation

Several recurring themes emerged from an initial macro-environmental analysis. Primarily, these revolved around tensions between an individual's motivation to share knowledge and the organisation's orientation towards its use. Organisations create structural capital to manage human capital and the business purpose and the collective assumptions and metaphors shape that organising process (Morgan 1997). Whether the collective mindset is rooted in an industrial economy model or a knowledge economy model of priorities shapes the way the psychological contract between the organisation and individuals plays out. Knowledge is created by individuals and changes constantly through the process of interpersonal negotiation (Blackler 1995). To fulfil its purpose, a firm needs to coordinate and integrate this human capital, which is optimised when knowledgeable individuals share what they know willingly. Knowledge workers' willingness to contribute to organisational activity with care and attention (van Winkelen 2006) tends to be grounded in priorities associated with self-actualisation/personal fulfilment, having choices in their work life balance, and belonging to something they find meaningful and with which they can be proud to be associated (Drucker 1999, Davenport 2005).

Scenario planning starts with the identification of two intersecting and polarised forces that fundamentally affect future outcomes. As the foundation for our scenarios we identified these key parameters as the interface between the metaphorical assumptions underpinning organisational meaning and purpose in industrial and knowledge economics, and the alternative ways individuals relate to the organisation based on the fundamental priorities of their psychological contract – either engagement with something the individual believes in or employment as a transactional relationship. The timescale we considered was "medium- to long-term", likely to be ten to fifteen years from now. Three viable scenarios emerged from our scenario planning process, identified by the names in italics in the centre of Figure 1.

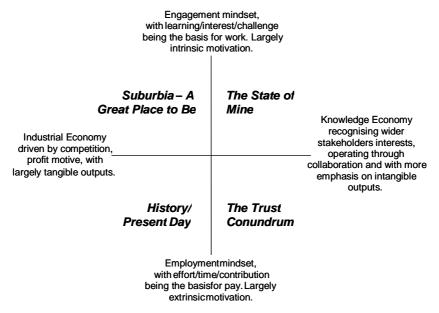


Figure 1: Potential boundaries for future scenarios

The workshop process identified the underlying assumptions in each of the different scenarios and some of these are shown in Table 1.

Table 1: Assumptions shaping each quadrant

Consideration	Historical and present day position	Suburbia – A great place to be	The Trust Conundrum	The State of Mine
Underpinning assumption of value creation	Industrial economy (Profit motive for capitalist wealth)	Industrial economy (Profit motive for improving societal wealth)	Knowledge economy (Differentiated value for societal stakeholder groups)	Knowledge economy (Value for individual societal stakeholders)
Individual – organisation transaction approach	Employment	Engagement	Employment	Engagement
Primary factor of production	Tangible goods and capital	Tangible goods and capital	Intangibles	Intangibles
Knowledge Purpose	The efficient co- ordination of goods and activities to maximise rents. Knowledge considered a subsidiary contributor to performance.	Product innovation - To amplify the utility of tangible products through the addition of knowledge in order to grow the wealth of the organisation and society.	The co-ordination and integration of knowledge to satisfy broad stakeholder interests steadily and responsibly through organisational control.	Process innovation - To use knowledge to improve the quality of life fulfilment/ happiness for everyone involved.

# 5. Managing intellectual capital components in each scenario

# 5.1 Suburbia: a great place to be

The first scenario, *Suburbia: A great place to be*, looks at the natural evolution of the industrial economy paradigm as the pace of change accelerates and the expansion of the competitive environment geographically and technologically increases the pressure for product innovation and service differentiation. The stimulus for this innovation is the quality and motivation of the people employed. Talented individuals contribute creatively when they feel they belong to something that matters, joining the organisation because of its reputation for interesting work and good employment conditions. Human capital management is the main lever to optimise organisational performance, while structural capital investments are needed to integrate knowledge effectively and efficiently.

In this scenario, the organisation is driven predominantly by the profit motive, although shareholder value is perhaps a richer measure. Results are achieved by the efficient delivery of a product (though not necessarily a physical product). Efficient production of repeatable units is the basis for value creation with continued reliance on industrial command and control techniques. Predetermined output and quality targets are used as a primary driver of employee performance. However, increasingly creativity and innovation are essential to respond to the pace of change, for example, in marketing and new product design.

Various manufacturers and construction companies (see for example Benetton (Camuffo et al. 2001), Toyota (Forster 2006), and aircraft construction (Brusoni et al. 2001)) appear to be early examples of operation in this scenario.

To excel in this scenario, organisations require different human resources management approaches for different employee groups. This could manifest itself in different types of employee contract, or through significant outsourcing or insourcing (Kang et al. 2007). It is critical to find appropriate ways to incentivise high quality contributions from the people associated with the organisation. Organisations need to develop a reputation for good employment terms and conditions since skilled and creative people can choose where to work.

There are two key aspects to co-ordinating the knowledge available to the organisation in this scenario.

- Modularisation of the organisation delivery process (Mankin and Cohen 2006, Felin and Hesterley 2007, Sawhney and Prendelli 2000) using the knowledge of smaller groups of motivated people.
- Very strong knowledge integration skills, with enough comprehension of all the diverse expertise
  to consistently interpret and facilitate communication at the interfaces between specialisms
  (Gnyawali and Madhavan 2001).

A tension between the drive for profit and maintaining the engagement of employees dominates this scenario. Leadership and sophisticated HR practices are important to resolve this tension – moving human capital management the highest priority. Structural capital investments in systems and processes to encourage collaborative working and communities of practice support knowledge integration.

#### 5.2 The trust conundrum

This scenario highlights the consequences of maintaining the conventional psychological contract with employees based on a transactional exchange of money for time, whilst placing an increasing emphasis on knowledge as a key economic factor. Effectively, this scenario describes the uncomfortable situation of becoming a knowledge-based operation, whilst failing to engage with employees as true knowledge workers (Drucker 1999, Davenport 2005). The organisation remains possessive about knowledge, viewing it either as a strategic differentiator or as a risk to be managed, whilst simultaneously expecting to foster a climate of individual knowledge sharing and commitment amongst those who really possess it. It was evident that this tension leads to an orientation towards measurement as the basis for encouraging and tracking relevant behaviours and performance. A large investment is needed in the structural capital mechanisms to manage the organisational ownership of knowledge and to monitor and stimulate performance in delivering knowledge-based services (Marr 2006).

Corporate responsibility for results dominates the management philosophy, even though the organisation nominally encourages employees to take responsibility for their own performance (Brook and Ober 2003). The legacy of a transactional approach to employment relationships prioritises control and efficiency as core business values. This makes it hard to trust that opportunistic, intrinsic motivation for knowledge work will deliver results. So the firm is compelled to manage through intensive measurement and to collect extensive amounts of data to support decisions. Alongside this, there is an increasing need to invest in building relationship capital to understand the expectations of diverse external stakeholders and find new ways of operating within a network of knowledge based relationships (Adler 2002). The external need to engage with relevant and committed stakeholders (e.g. staff, communities in which people operate, alliance partners, suppliers and customers) forces clarity around governance and values. This scenario appears to describe particularly well the public sector organisations increasingly developing knowledge based service delivery. There are two key aspects to co-ordinating the knowledge available to the organisation in this scenario.

- A more comprehensive approach to tracking knowledge value against a broader range of outcome measures to satisfy the variety of stakeholders (Edvinsson 2002). This requires a modification of processes, roles and performance targets (e.g. time and resource allocations) to collect and interpret a wider range of data.
- Improving internal communication as a key co-ordinating mechanism to attempt to motivate transactionally employed individuals and help them understand and appreciate complex external drivers shaping the organisation's activities. Communicating values consistently and thoroughly by 'walking the talk' is challenging but critical to engendering trust. Demonstrating respect for the balanced objectives has to be authentic in all the company's actions, otherwise the trust necessary for knowledge sharing by individuals becomes unsustainable.

The inherent tension in this scenario is between authority vested in the hierarchy of the organisation to deliver performance and the trust required for individual knowledge sharing. Structural capital investments to ensure scrupulous fairness and extensive and open communication become the basis for resolving this tension.

#### 5.3 The State of Mine

In the second scenario in which knowledge is the significant factor of production, the dynamics change to a situation where individuals, groups and organisations negotiate common areas of interest before becoming involved together in something approaching a partnership. Learning and

competitive agility emerge from networks of individuals and groups coalescing around shared objectives. Relationship capital becomes the basis of value generation, while light touch structural capital creates coherence and identity. Within this scenario, both the individual's and the organisation's wider responsibilities to other activities and society are fully acknowledged, with a wide variety of work arrangements and reporting mechanisms being available to support this. Many individuals work on a portfolio of tasks and for more than one organisation, depending on their personal skills, motivations and life goals (Handy 2001). The organisation is continuously morphing, varying its purpose and the knowledge resources it uses to satisfy the value needs of society and the individuals or small groups it works with (Rindova and Kotha 2001). Relationship management in terms of negotiating roles to get the best value from those involved with the organisation is a key organisational capability in this scenario. The boundary of the definitions of human capital and relational capital becomes increasingly blurred due to the variety of employment and partnership arrangements.

Organisational boundaries are considerably more fuzzy, with self-employed people, small firms and collaborative partnerships all working together as a network. Effort is co-ordinated through mutual enthusiasm for the purpose and mission of the organisation as well as the task at hand (Brafman and Beckstrom 2006). Shared principles and values about how to work together to achieve outcomes are negotiated in advance and form the basis for collective endeavour. Successful organisations are those which innovate to give greater freedom of choice to many people (Chesborough 2006). They achieve this because they have a profound knowledge of how to facilitate the integration of ideas and knowledge across their network. Organisations that may be moving towards the *State of Mine* scenario include film sets (Bechky 2006, Arthur et al. 2008) and essentially knowledge-based businesses such as Yahoo, Google, Visa and American Express (Forster 2006).

A key aspect to co-ordinating the knowledge available to the organisation in this scenario is recognising that a distributed and flexible workforce needs to use collaborative technologies to support effective knowledge flows. Automating information and explicit knowledge sharing through technologically based structural capital investments is essential. Tacit knowledge is what individuals and groups bring to the organisation and need to share to generate value together and advanced technologies need to be used to make virtual inter-personal connections as real as possible. In this scenario, a key source of tension lies in the identification of "the organisation." A coherent identity is difficult to maintain with fluid and flexible boundaries and patterns of relationships. Yet, long term close relationships are known to be the basis for more effective knowledge sharing, particularly tacit knowledge sharing (DeFillippi and Arthur 1998, McKenzie and Van Winkelen 2004). Developing a coherent identity for the organisation based on clearly articulated values means giving time and attention to the ongoing negotiation of interests, roles and responsibilities. This requires sophisticated inter-personal and thinking skills (McKenzie et al. 2007b).

### 6. Conclusion

It is important to note the limitations of the scenario approach that we have adopted. Each of the scenarios represents a fairly idealised extreme based on the value assumptions underpinning the transactions between individuals, organisations, business and society, which means that reality may involve aspects of the scenario, rather than all of its features. Clearly it is also not possible to change the two dimensions upon which the scenarios are constructed wholly independently of one another. For example, the move to greater measurement of intellectual capital resources in The Trust Conundrum would demand at a reasonable level of staff engagement to make it work. Even so, a valuable insight that has come from using this approach is the understanding that what really differentiates 'journeys' towards the future via these scenarios is how steep the trajectory is across the scenario grid, from the bottom left to the top right in Figure 1. A steeper climb (via Suburbia: A Great Place to Be) holds to today's business model, focussing on efforts to engage the attention and creativity of knowledge workers. A shallower slope (via The Trust Conundrum) allows a lesser emphasis on new relationships with staff as knowledge workers until the structures and rules of the business are modified to support more open exploration of new opportunities. Progression along both of these paths is clearly evident today, though often with little clarity about what differentiates them and therefore what might be realistic expectations of the outcomes and what the challenges are that need to be overcome.

This research started with the intention of stimulating thoughts about the future of knowledge management. What emerged is a picture of the future that challenges the purpose of business and

the process of organising, with knowledge being harnessed for gains that are valued by a wider range of organisational stakeholders. No scenario is right or wrong – or even desirable or undesirable. All have the potential to succeed or fail in their own terms and in the market, depending on the quality of the execution. There are clear indications that different sectors are already moving along paths associated with each scenario. Manufacturing, construction and other industries associated with physical products are tending towards *Suburbia* – *A Great Place to Be.* Public sector bodies seem to be on a path through *The Trust Conundrum.* A few dynamic, fast moving, creative and service driven industries are experimenting in *The State of Mine.* Understanding the competitive and macroenvironmental drivers shaping the organisation's path is the starting point for any knowledge strategy. This research relates this understanding to prioritising investments choices in establishing and sustaining appropriate human, structural and relational capital appropriate for the future.

These scenarios were developed before the recent global economic turmoil began to unfold. The research immediately following the development of the scenarios concentrated on understanding more about some of the drivers (for example, how to work more collaboratively internally and externally). It would now be interesting to observe the extent to which the evolution of these scenarios is affected by the new financial constraints and priorities. Continuing to track macroenvironmental trends and relate them to the scenarios needs to be an ongoing activity.

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