

# DSS - Rethinking Strategic Management

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*In recent years new ways of strategic thinking have been proposed. Naturally the Ansoffian and Porterian approaches are still acknowledged and respected. Nevertheless, increasing competition and globalisation of markets have claimed that the approaches presented by Ansoff and Porter are insufficient or even incorrect. Certain indications that the Mintzbergian approach would be more appropriate can be found, but also attempts to combine these exist. But what are really the remedies in strategic management (SM) that have been presented, as 'schools of thought in SM', over the years? Are they really different from each other? In this discussion the role of decision support systems (DSS) is emerging again as an effective tool, despite the early doubts over their significance.*

*This paper is a review of early and current trends in strategic thinking and the possibilities emerging from developments in the field of DSS.*

## 1. Introduction

The business world has over the past decade been subject to fundamental structural transition brought about by deregulations, global competition, technological discontinuities (Porter, 1990, Prahalad and Hamel 1990, 1994, Laszlo et al, 1990, Kotter, 1990, Levenhagen et al, 1993, Lorange et al, 1993). This has resulted in new customer expectations and imposed new strains on business managers. In attempts to restore competitive edge many managers are abandoning old strategy recipes and looking for new more effective guidance in turbulent environments. Yet, are the recipes really new or are they just the emperor's new clothes?

As we head toward a post-industrial society we need new concepts of the world by which to orient ourselves. Classical concepts have become unreliable and, what is worse, to some extent even irrelevant. "...*The rules of the game has changed, but the game is new.*" (Laszlo et al, 1993). In our opinion it is not so much the rules that have changed but the game is starting to resemble the adventures of Alice in Wonderland. Kanter (1989) invites corporate elephants to learn how to dance.

Strategic management is built on a search for organisational intelligence. Earlier approaches to strategic management focused on the use (or lack of use) of

analytically rational decision processes and pictured the task of intelligent management as that of failure to act rationally (March, 1988a,b, Levinthal and March, 1993). The concept of intelligent management relies on Simon's (1960) classical framework of managerial decision-making; intelligence-design-choice. Theories on strategy for exploiting comparative advantages and competitive edge were built on a conception of calculated rationality. This vision of calculated rationality continues to be the dominant thought, although it has been modified as a result of heavy criticisms of its assumptions (Mintzberg, 1990a,b, 1994[a,b,c,], Ansoff, 1991, 1994).

Three basic assumptions underlie our ideas of intelligence and theories of choice: (i) pre-existence of purpose, (ii) consistency, and (iii) rationality. The focus on rational techniques make us overlook two fundamental elements of choice, i.e. intuition and tradition and faith. These can be seen as possible sources of irrationality. Why? Because they are the sources of our value systems. Decisions, which are heavily loaded with values or where the available quantitative data is insufficient tend to give leeway for values to decide the outcome of decisions.

Today the field of strategic management is engaged in hair-bending activities trying to sort out a plethora of concepts. The development seems to be a quest for classifying as much as possible and this seems to lose our touch to the practical business world and toss ourselves into the doldrums of academic argumentation. We now have Mintzberg's (1990) 'ten schools of thought', the three synthesising schools (Elfring and Volberda, 1994), the stakeholder approach (Rhenman, 1964; Rhenman and Stymne, 1965; Freeman, 1984; Näsi, 1995), the competence-based competition approach (Prahalad and Hamel 1990, 1994 a,b, Hamel and Prahalad, 1989, Hamel, 1994, Hamel and Heene, 1994, Bogner and Thomas, 1994), the Porter framework (1980, 1985) - only to mention a few. Still the classic works by Schumpeter (1934), Penrose (1959), Simon (1960), Anthony (1965), Andrews (1965), Steiner (1969) are relevant to the present business world. Nevertheless, something is obviously wrong since we are still searching for the wholly grail - this time in terms of a new paradigm (Camerer, 1985, Prahalad and Hamel, 1994b; Schendel, 1994). Given the plethora of approaches it is quite right to make additional efforts to try and unify the field of strategic management and focus its research energy (Schendel, 1994: 2 see also Rumelt et al, 1991).

In the midst of these varying number of schools from ten, synthesised (or lumped - using Mintzberg's terms) down to three schools, we propose to reduce the scope to include only one: *Strategic Management and DSS*. Before we present this approach we shall review Mintzberg's ten schools and the three synthesising schools. This will be done in section 2. In the third section we will discuss the stakeholder approach and the competence-based competition framework as these two represent further attempts to find new ways of unifying the field of SM. In the fourth section

we will outline a conceptual framework for strategic management and DSS as a tentative approach of allowing all schools to flourish.

## 2. Strategy as Schools of Thought

There are numerous ways of studying strategic management, some of them are more pedagogic than others. One method is to classify strategic management into **schools of thought** and this is in terms of teaching and learning an ingenious method. Then we can of course argue about the number of schools or units and sub-units to strategic management. Mintzberg (1990b) discusses ten schools, Elfring and Volberda (1994) excludes one of Mintzberg's schools (the last) and bases their three synthesising schools on nine of the ten Mintzberg's schools. Karlöf (1987) also produces a classification based on the number ten. However, the content differs widely from Mintzberg's. Gilbert, Hartman, Mauriel and Freeman (1988) use six schools of thought, Näsi adds one more and arrives at seven (see Exhibit 1). Kristamuljana (1994) reduces the scope into two schools of thought.

The discussion when based on schools of thought is most likely less confusing than the attempt of describing the possible steps that should or should not be included in the strategic management process. The classic model by Ansoff (1965) must be the by far most detailed with an impressive number of 57 sub-steps. Let us here in this section restrict ourselves to Mintzberg's ten schools and focus on the tenth school, i.e. the *configurational school*. We will then briefly present a reduction of the ten schools to three schools, and we have chosen this classification since *the configurational school* is also present here. We will then return to the premises of the configurational school in section 4. We are in no way arguing that one way of thinking is more correct than the other - merely providing a collected display of what has been said so far. In addition to this school type thinking we will discuss two other 'hot' topics and we invite the reader to decide for himself/herself where these two approaches place - in terms of schools.

### *Mintzberg's ten schools of thought*

In exhibit 2 we find the central characteristics extensively displayed in a way that makes it easy to compare the ten schools. In this section we would like to pay most attention to the configurational school since this is the school where Mintzberg places himself into. It is also the school that we will draw on in our last section when we outline the framework for a single school of thought - that of DSS and strategic management.

#### **Karlöf's strategy schools**

1. The experience curve
2. The BCG Matrix
3. Market attractiveness/strategic position
4. The Mysigma profitability graph
5. PIMS
6. Porter's generic strategy
7. Gap analysis
8. The product/market matrix
9. Problem detection studies
10. McKinsey's 7 Smodel

#### **Näsi's strategy schools**

1. Ansoffianism
2. Planning Process Approach
3. Portfolio Management
4. Business Idea School
5. Porterism
6. Excellence and cultural Approach
7. Mintzbergism

<p><b>Mintzberg:</b> see exhibit 2</p>	<p><b>Gilbert, Hartman, Mauriel, Freeman</b></p> <ol style="list-style-type: none"> <li>1. The Harvard policy framework</li> <li>2. The portfolio framework</li> <li>3. The competitive Strategy framework</li> <li>4. The stakeholder management framework</li> <li>5. The planning process framework</li> <li>6. The seven S framework</li> </ol>
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*Exhibit 1: Strategy as schools of thought*

Mintzberg gives in a chapter in Fredrickson's book 'Perspectives on Strategic Management (pp.105-237, 1990b) an extensive discussion over the ten schools of thought in terms of premises, critique, and context and contribution, and it provides a very good starting point for anyone wishing to unravel the secrets of strategic management. More help in this pursuit can be found in Mintzberg's recent book (1994) 'The Rise and Fall of Strategic Planning', but also from the articles by Mintzberg (1990a) and Ansoff (1991) over the design school.

Let us focus on the **configurational school**, which is a summary school of thought where everything from the nine schools is allowed under certain conditions. Mintzberg provides four central premises to this school of thought. First, the behaviours of firms are best described in terms of distinct integrated clusters of dimensions concerning state and time - **configurations**. Secondly, strategy formation process is episodic (Anthony, 1965) where the form of the organisation adopts and matches with the environment engaging in certain activities for a specific time. Thirdly, the process can be that of **conceptual design, formal planning, systematic analysis, intuitive vision, individual cognition, collective learning, politics**. The driving force can be personalised leadership, culture or the external environment. The strategy can have any of the five P forms (pattern, ploy position, perspective or plan) (Mintzberg, 1987) but it must be found at its own time and context. Finally, the configurations have a tendency to sequence themselves over time.

From the premises it becomes clear that **lumping** is the key process, and here the critique comes in, '...all lumping must be considered somewhat artificial'. The configurational school attempt to **explain** by distorting - like theory tries to

simplify by distorting. Mintzberg, however, justifies his ten schools by referring to the common fact - that we prefer to think in categories - schools - in order to learn. In conclusion we would like to say that the lumping is artificial for pedagogic reasons - not for reasons that come out of a need to solve problems or make decisions, i.e. managerial reasons - **real** reasons.

Consequently, we are still left with the key problem in strategic management - **how can future performance of an activity be improved** (Brännback and Spronk, 1995), i.e. how can we provide better tools (or schools) for strategic management so that companies factually can perform better?

Exhibit 2: *SCHOOLS OF THOUGHT IN STRATEGIC MANAGEMENT* (adapted from Mintzberg, 1990, pp.192-197)

Underlying Dimension	Design	Planning	Positioning	Entrepreneurial	Cognitive	Learning	Political	Cultural	Environmental	Configurational
<b>Major Source</b>	Selznick (1957), Andrews (1965)	Ansoff (1965)	Schendel (mid-1970) Porter (1980)	Schumpeter (1934), Cole, (1959), and others in economics	Simon (1945) March and Simon (1958)	Lindblom (1959,-63) Cyert and March 1963), Quinn,(1980) Weick,(1969)	Allison (1971), Pfeffer and Salanick (1978)	Rhenmann and Norman, late 1960 in Sweden; no obvious source elsewhere	Hannan and Freeman, (1977), Aldrich and Pfeffer,(1976); contingency theorists	Chandler (1962), Miller and Mintzberg, late 1970., Miles and Snow (1978)
<b>Base Discipline</b>	none	urban planning, systemstheory, cybernetics	economics, industrial organisation, military history	none	psychology (cognitive)	none	political science	anthropology	biology	history
<b>Strategy</b>	explicit perspective, unique	explicit plan, sub-strategies and programs	explicit generic positions, competitive also ploys	implicit perspective (vision), personal and unique(niche)	mental perspective	implicit patterns, often collective	plays and positions, subunit or organisational	collective perspective, unique and usually, implicit	specific position	all those to the left, in context
<b>Central actor</b>	chief executive	planners	analyst	leader	brain	whoever can learn	whoever has power	collectivity	environ-ment	all those to the left, in context
<b>Leadership</b>	dominant, judgemental	responsive to procedure	responsive to analysis	dominant, intuitive	source of cognition	responsive to initiatives or own learning	weak, at best a player	part of collectivity	acquiescent	any, so long as categorical
Underlying Dimension	Design	Planning	Positioning	Entrepreneurial	Cognitive	Learning	Political	Cultural	Environmental	Configurational
<b>Basic Process</b>	cerebral, simple, informal, judgemental deliberate prescrip-tive	formal, decomposed, staged, deliberate, prescrip-tive	analytical, systematic, deliberate, prescrip-tive	visionary, intuitive, largely deliberate, descriptive	menatl, overwhelming, des-criptive	emergent, informal, messy, des-criptive	conflictive, aggressive, messy, e-mergent, deliberate, descriptive	ideological, constrained, collective, deliberate, descriptive	passive, emergent, descriptive	integrative, episodic, sequenced, all to the left, descriptive
<b>Current and Future Status</b>	foundation of prescription only	low, unless becomes empirical	very high	some increased interest	moderate now	growing interest	growing interest	moderate now, de-cline likely	low now, decline likely	growing interest

<b>Organisation</b>	ordered, acquiscent font of given strengths and weaknesses	structured, decomposed for programming	font of competitive advantage	implicit, malleable, simple	incidental	eclectic, flexible, playful	conflictive, disjointed, uncontrollable, aggressive	cohesive, normative	acquiscent	any, so long as categorical, all to the left
<b>Structure</b>	machine, bureaucracy centralised formalised	machine, bureaucracy centralised formalised	machine, bureaucracy centralised formalised	simple structure, centralised, organic	not specified	adhocracy, professional bureaucracy	adhocracy, professional bureaucracy	missionary organisation	passive, bureaucratic	any, so long as configurational
<b>Change</b>	occasional quantum	periodic, incremental	piecemeal, can be ad hoc	occasional, revolutionary, opportunistic	infrequent (resisted mentally)	continual, incremental, piecemeal	frequent, piecemeal, idiosyncratic	infrequent (resisted ideologically)	never or rare	occasional, revolutionary
<b>Underlying Dimension</b>	<b>Design</b>	<b>Planning</b>	<b>Positioning</b>	<b>Entrepreneurial</b>	<b>Cognitive</b>	<b>Learning</b>	<b>Political</b>	<b>Cultural</b>	<b>Environmental</b>	<b>Configurational</b>
<b>Environment</b>	expedient opportunities, seldom threats	acquiscent, checklist of factors to be forecast or controlled	exigent in terms of established competition, analysable in economic terms	maneuverable, to find a niche	overwhelming for cognition	demanding, difficult	intractable, malleable	incidental	dictatorial, exigent	any, so long as categorical, all to the left
<b>Intended Message</b>	fit	formalise	analyse	envision	cope	learn	promote	coalesce	react	integrate
<b>Realised Message</b>	think; strategy making as case study	program	calculate rather than create and commit	centralise	worry (since cannot cope or invent)	play rather than pursue	hoard rather than share or produce	perpetuate rather than change	capitulate	lump rather than nuance
<b>Vocabulary</b>	distinctive competence competitive advantage SWOT formulation implementation	programming, budgeting, scheduling	generic strategy, strategic group, industry and competitive analysis, portfolio	vision	map, frame, reframe, mental set, bounded rationality, cognitive style	incrementalism, emergent strategy, sense making, revitalisation	power, coalition, political games, collective strategy	myth, culture, ideology	selection, environmental, dynamism, complexity, niche	configurational, archetype, stage, life cycle, strategic revolution
<b>Champions</b>	case study proponents, rational leadership	rationalisers MBAs, professional managers	rationalisers MBAs, professional managers	business press, individualists, innovators	psychologically oriented	divergent thinkers, frustrated lower mgrs.	power oriented	mythologists (esp. in Scand)	population ecologists	lumpers, integrators

### ***Three synthesised schools of thought***

Based on the ten schools of thought presented above it is not surprising to find statements that the field of strategic management is fragmented (Elfring and Volberda, 1994). They maintain that it is not fruitful to try and find a universal definition of strategic management, because “..the choice of a definition and application of specific strategic management techniques is greatly dependent on which paradigmatic schools of thought in strategic management one prefers..”. Thus they suggest a synthesis, or lump (using Mintzbergs term’s) of the accumulation of knowledge within the ten schools of thought. This results in a suggestion of three schools of thought: (i) the boundary school, (ii) the dynamic capability school, and (iii) the configurational school. Due to their character of being synthesised schools they are also based on a number of base disciplines. The reason for Elfring and Volberda suggesting a synthesising school of thought is simply the fact that when related to research and practice it is rare that only one school dominates and that a combination is more likely, i.e. in their opinion Mintzberg’s classification is too fragmented.

The fragmentation appears not only in the number of base disciplines, but also (i) the classification into *descriptive* and *prescriptive*, (ii) the distinguishing between *voluntaristic* and *deterministic*, (iii) the unit of analysis, (iv) the research area, and (v) the application of a static or dynamic perspective. The cause of fragmentation can be found in the degree of uncertainty and the virtual lack of co-ordination of research procedures and strategies between researchers (Elfring and Volberda, 1994, see also Schendel, 1994:2) and this has led to that strategic management is sometimes called ‘a study in adhocracy’.

The boundary school is primarily concerned with research questions such as majority and minority participation, participation, joint ventures, network structures, i.e. make, buy or cooperate decisions ( Hamel et al, 1989, Ito and Rose, 1994, Markides and Williamson, 1994).

The dynamic capability school has focused on organisational learning as means by which to develop core competencies (Argyris and Schön, 1978, Amit and Schoemaker, 1993, Levinthal and March, 1993, Nevis et al, 1995, Prahalad and Hamel, 1990, Schoemaker, 1992, 1995, Senge, 1990, Isaacs and Senge, 1992) that are hard to imitate. The dynamic capability school argues that a firm’s resources and capabilities are a better basis for strategy formulation which is contrary to the traditional view of market oriented strategies (Drucker, 1974, Aaker, 1992, Day, 1990). The dynamic capability school draws on the resourced-based theory of the firm (Penrose, 1959, see also Bartlett and Goshal, 1993, Black and Boal, 1994) but also on theories on entrepreneurship (Schumpeter, 1934, see also Kanter, 1989, Stopford and Baden-Fuller, 1994).



Typical research issues of interest for this school of thought are: In fast-changing markets how do new market structures evolve? Second, what are the successful strategies associated with growth-market development? How is it that certain early players establish dominating positions before market knowledge and structures become well defined? Who has the competitive advantage, is it the first mover or the second mover? Thirdly, how do company-level activities link to group activities?

The third synthesising school is the configurational school. This school of thought is also found in Mintzberg’s classification as the tenth school. Mintzberg defines the configurational school as a collective school for all the remaining nine schools. The key argument is that strategy is context dependent and is an episodic process where a particular type and form of organisation matches to a particular type of environment and engages in certain activities under a specific time period (Mintzberg, 1990b:182 (see also Miles and Snow, 1978). This school is occupied by finding means by which an organisation can handle change (from one configuration to another). Elfring and Volberda describes this school as having its roots in socially-oriented organisational sciences, business history, biology, and mathematical theories such as cybernetics. The configurational school is distinct from the other conceptual schools as a result of a strong empirical orientation and a systematic measurement of configurations (Elfring and Volberda, 1994, p.18).

	<b>The Boundary School</b>	<b>The dynamic capabilities School</b>	<b>The Configurational School</b>
<b>Base Disciplines/ Theories</b>	<ul style="list-style-type: none"> <li>• agency theory (economics/Psychology)</li> <li>• transaction costs theory</li> <li>• industrial organisation</li> <li>• control theories (sociology)</li> <li>• decision-making theories (psychology)</li> </ul>	<ul style="list-style-type: none"> <li>• resource-based theory of the firm (economics)</li> <li>• entrepreneurship (economics)</li> <li>• innovation theories (organisation theory)</li> <li>• learning theories (organisational behaviour)</li> </ul>	<ul style="list-style-type: none"> <li>• social science,</li> <li>• history,</li> <li>• equilibrium models (biology), catastrophe theories (maths)</li> </ul>
<b>Schools of thought</b>	<ul style="list-style-type: none"> <li>• positioning</li> <li>• cognitive</li> <li>• cultural</li> <li>• political</li> </ul>	<ul style="list-style-type: none"> <li>• design school</li> <li>• entrepreneurial</li> <li>• learning</li> <li>• environmental</li> </ul>	<ul style="list-style-type: none"> <li>• political</li> <li>• environmental</li> <li>• learning</li> <li>• cognitive entrepreneurial</li> </ul>
<b>Problem-solving tools</b>	<ul style="list-style-type: none"> <li>• The strategy sourcing process</li> <li>• Porter’s value chain</li> </ul>	<ul style="list-style-type: none"> <li>• The roots of competitiveness (Prahalad&amp;Hamel)</li> <li>• The Capability matrix (Schoemaker)</li> </ul>	<ul style="list-style-type: none"> <li>• Archetypes (Miller&amp;Friesen)</li> <li>• Strategic types (Miles&amp;Snow)</li> <li>• FAR method (Volberda)</li> </ul>

*Exhibit 3: Synthesising schools of thought in strategic management (Elfring and Volberda, 1994)*

### 3. Other approaches

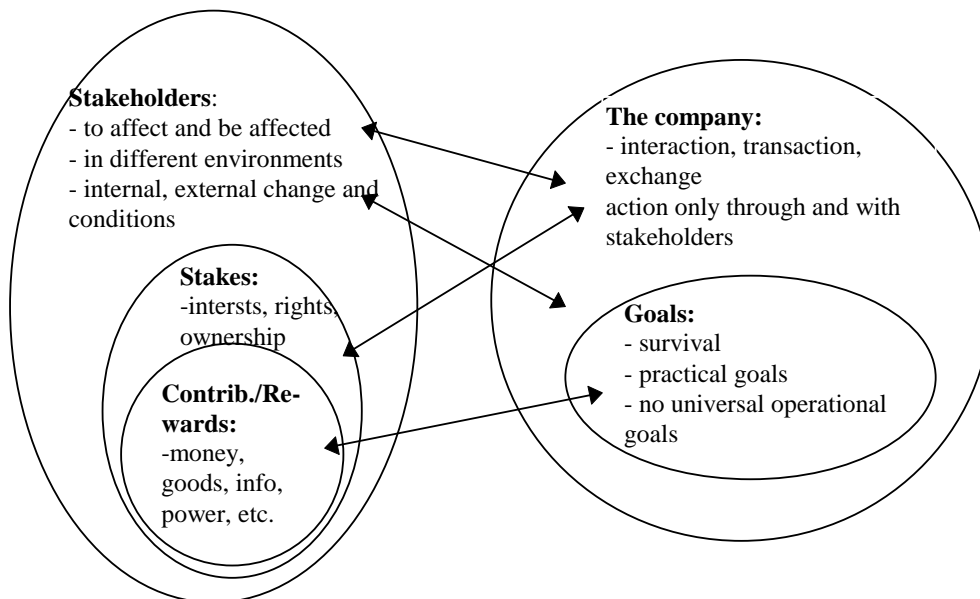
#### *The stakeholder approach*

There are, of course, numerous other perspectives, some already fallen in oblivion and others being revived. **The Stakeholder approach** (Näsi, 1995) was explicitly outlined by Rhenman (1964) and Rhenman and Stymne (1965). The roots lie in the work by Barnard (1938), Cyert and March (1963), Freeman (1984) (cf. Näsi, 1995, pp. 19-32). The approach outlined by Rhenman and Stymne won appreciation in Scandinavia and came to dominate the university management teaching. Moreover the approach was used as a framework both by academics and practitioners. The dominance lasted until the dawn of the 'Porter' era, and was then tossed back into the doldrums of the plethora of theories. Once again the stakeholder approach - also called stakeholder theory - came back into the limelight through Freeman's work in 1984 (Näsi, 1995, p. 20). The stakeholder approach was connected to the realm of business and society and has come to function as an umbrella, a framework, for value issues, ethics and social responsibilities of businesses. In terms of Mintzberg's ten schools of thought the stakeholder approach encompass the findings of the political, cultural and the environmental school. Contrary to Mintzberg's arguments that these three schools are on the decline (with possible exception of the political school), Näsi argues that the stakeholder has only in the 1990s seriously entered the scholarly discussion. According to Freeman (1984) the stakeholder concept may be defined as: "any group or individual who can affect or is affected by the achievements of a corporation's purpose." (Näsi, 1995, p. 21).

Typical stakeholders are owners, management, employees, customers, suppliers, lenders, government, community, media, unions, consumer groups, and environmental groups. Thus, the stakeholders are representatives of both internal and external forces of a firm. In this sense the stakeholder approach does not differ much from Porter's five forces (1980, 1985), that determine a firm's competitive strategy. Corstjens (1991) defines into the realm of *customers*, one of the five competitive forces, also *institutional customers* that are made out of various consumer interest groups (e.g. environmental groups, government, community, media, unions, etc.). Many times these are referred to as *third party* actors that implicitly or explicitly influence the competitive environment of a firm. Nevertheless, these third party actors have, according to Corstjens, influence on all five forces.

The difference between the Porter framework and the stakeholder approach lies in the treatment of the firm's *goal*. In the Porter framework the ultimate goal for a company is to create a sustainable competitive advantage, whereas Rhenman and Stymne (1965) quite promptly maintains that *the firm itself quite simply has no goals!* With reference to today's business environment this conclusion appears highly dubious, if not somewhat dangerous. The goals, it appears, are more or less

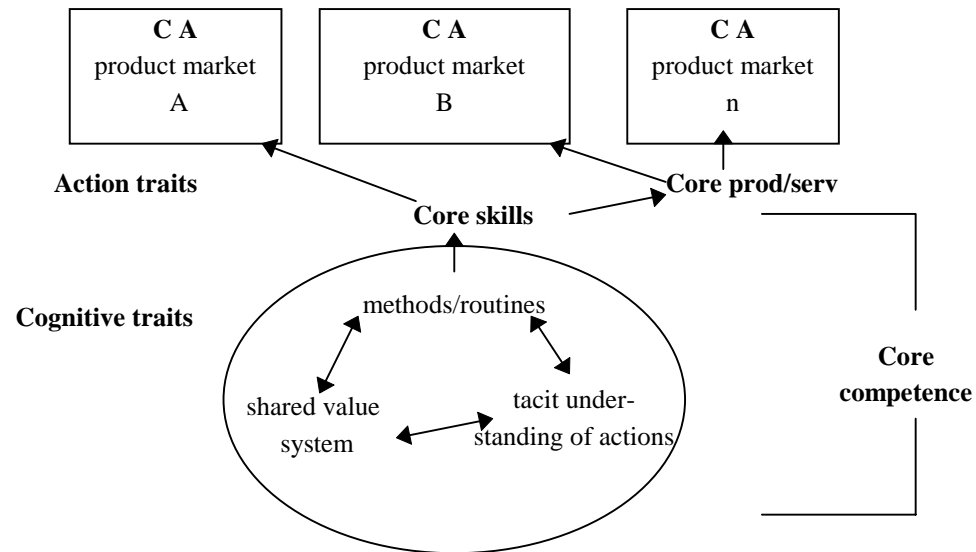
expressed in terms of contributions and rewards (stakes and pay-off) and then we have not actually come very far from the Porter framework where rewards indeed are the proceeds that stem out of a sustainable competitive advantage. The stakeholder approach is displayed in figure 1 below.



**Figure 1:** The stakeholder approach (Näsi, 1995)

Much in the same line of reasoning lies the *competence-based competition* framework by Prahalad and Hamel (1990, 1994 a,b, Hamel and Prahalad, 1989, Hamel, 1994, Hamel and Heene, 1994, Bogner and Thomas, 1994).

This framework, as presented by Bogner and Thomas (1994, p. 114), relies on internal forces which is based in the company's core competence and on sustainable competitive advantage (SCA) which is the external trait (Fig.2). Bogner and Thomas argue that a core competence cannot be a core competence unless it does not give a firm a competitive advantage in a given market place by satisfying a customer need better than a competitor. It is important to make this distinction for avoiding both a misallocation of resources to activities that *do not* lead to SCA and an under-allocation of resources to those activities that *could* lead to a SCA.



**Figure 2:** Competence-based competition (Bogner and Thomas, 1994)

*Core competencies* are internal traits; skills and understanding acquired over time - a company's *knowledge-base*. *Competitive advantage* is the external trait, the competitive edge a company has on a market based on a bundle of goods and/or services offered at a price charged. Core competencies are quite often not even interesting for the customer, i.e. in the drug industry; a core skill in refining a specific drug. Such a thing as competitive advantage out of *pure luck* is an artefact according to Bogner and Thomas. Core competencies are unique and ad hoc competitive advantage lack the trait of skill and replicability.

With reference to this competence-based framework we can quite easily continue to develop it towards the realm of decision support systems (recently also called knowledge-based support systems (KSS)). It soon becomes obvious that decision support systems in this framework can make significant contributions to strategic management. Decision support systems will become an inherent element in the concept of *core competence*.

In the next section we will continue to develop this line of reasoning and show how DSS indeed can make significant contributions to strategic management. We will also discuss the relevance of 'schools of thought' in strategic management - whether ten or three, and show how a DSS enables the combination all ten schools and how strategic planning will become strategy formation as in the premises of the **configurational school**.

#### 4. Strategic Management with Decision Support Systems

##### *Past doubts*

The possible contributions of computers to the field of strategic management has long been doubted. In 1965 Anthony stated (p.45) “..it is because of the varied and unpredictable nature of the data required for strategic planning that an attempt to design an all-purpose, internal information system is probably hopeless. For the same reason, the dream of some computer specialists of a gigantic data bank, from which planners can obtain all the information they wish by pressing some buttons, is probably no more than dreams.” Simon (1960) was also doubtful but saw some possibilities. Both authors acknowledged the fact that many companies were trying to develop some kind of support systems for decision-making. Ackoff (1967) was heavily criticising the premises for management information systems (MIS) and Little (1970) described the problems that managers faced when working with models. Little consequently outlined what a model should *be, do and not do*, and this is relevant still this day. On mathematical models and their possible contributions Anthony is very doubtful not to mention the possible contribution of computers in this context (p.60 and p.62):

“Even the most sophisticated model is unlikely to include enough data, arranged in the right way to provide an automatic answer to questions that may be asked of it. The dream of a giant computer that gives instant answers to such questions (...) is only a dream at present, and is likely to remain so for a long time. Not many companies have such models. The task of preparing one and keeping it current is expensive both in staff time and executive time (...) no one trusts the validity of the assumptions incorporated in the model..Nevertheless, the number of companies that are attempting to construct such models seems to be growing rapidly.”

“In the management control process, the sophisticated model is probably of extremely limited usefulness..the manager operates within policies already established; he does not explore the implications of new policies..A few computer enthusiasts foresee an era of ‘automatic management’, when computers will make all the decisions now made by operating managers (...) we believe such a prediction to be highly unrealistic.”

It is true that part of the explanation to why computer-based support systems have had so little success in supporting managerial decision-making lie in the realm of measurement, i.e. the handling of quantitative issues (measurable) and qualitative issues (hard to measure). Although most decisions taken in firms have an underlying financial structure where results are expressed in monetary units, but from this does not follow that money is the *only* basis of measurement, or even that it is the most important basis (Anthony, 1965). There are such measures as market share, productivity measures, enrolment, etc. that are very useful too, not to mention nonquantitative expressions such as quality, ability, cooperation, and so on. Or how do we model **values** and **value contradictions** (cf. Brännback and Malaska, 1995) Some successful work has been done in quantifying value judgements (Bana e Costa and Vansnick, 1994). These recent developments

towards solving most of the problems of yesteryear (concerning modelling hard and soft data) have been possible because of the fast developments in the field of information systems technology.

Yet, the criticism of decision support systems (DSSs) having little or no significant impact on decision-making (Alter, 1981, 1992, Angehrn and Jelassi, 1993, Bell, 1992, Keen, 1987, Stabell, 1987) has led to the fact that DSSs in strategic management is still a rarity (Carlsson, 1991, Turban, 1991, Holtham, 1992), and many people still believe that DSSs cannot provide support in strategic management. We strongly believe that DSS **can** provide support for strategic management (Brännback, 1994, Carlsson and Walden, 1994). The past limitations on the use of empirical data do not exist with modern information technology.

Managers limited **knowledge of** and **ability to** use computers are less relevant to the modern business world as an increasing number of managers can use computers today. On discussing information handling within strategic planning, management control, and operational control Anthony stresses the degree of detail and the cost of providing information. The expertise of the specialist in management control systems does not need to know *about* the information handling, but in a general way *the capabilities and limitations* of computing equipment. How to make the best combination of the available equipment or how to construct the best program are questions and tasks for engineers. Anthony cites McFarlan (pp.96-97) on what the tasks of each party are and should be, and that they need to cooperate in order to provide results with any significant impact on performance:

“The information handling specialist has a dynamic responsibility to utilize new techniques for the improvement of information available (...) Operating people bring a bias, which favors preservation of the status quo. The information handling analyst (...) his bias is towards the introduction of too much change (...) While it is not his responsibility to decide what information the manager *should* have, it is his responsibility to show the manager information he *can* have (...) Successful implementation of an improvement in an information handling system requires coordination efforts by both information handling specialists and operating personnel.”

### ***Prospects***

In the fast changing business environment of today, managing of the firm's knowledge base and to what extent it matches the changing competitive conditions becomes critical (the second premise of the configurational school). This can be seen as managing the distinctive knowledge base over time, containing both technical and social knowledge.

A simple model of how strategic information is processed may be presented as follows:

Data → Information → Knowledge → Expertise

Data must be enacted by the company before it can be considered as information relevant to the company. Next, information need to be integrated, assembled in a meaningful way, thus yielding knowledge. Knowledge itself must then be transformed to lead to expertise. Expertise is an articulated set of complementary complex visions. Visions may occasionally be conflicting but they provide a unique ability to a wide variety of problem solving (Nonaka, 1991, 1994, Prietula and Simon, 1989, Durand, 1993).

The developments of information systems technology has resulted in new opportunities for developing DSS **that have an significant impact in strategic management**. The DSS will make strategic management a process resembling very much the premises of the configurational school where the strategy making process will be that of conceptual design, formal planning, systematic analysis, but also intuitive vision, individual cognition, collective learning, and politics. Furthermore the DSSs will be context specific, designed for **that** company and **that** business, where the form and the content of a DSS will adopt and match to the environment engaging in certain activities for a specific time. The reason for this lies simply in the characteristics of **strategic management** which we define as a *process for creating a sustainable competitive advantage* (Brännback 1993).

These systems are visual, in that they display numerical data and graphical displays together, they model qualitative data and quantitative data, and the user can easily orient him/herself in the system (Angehrn and Lüthi, 1990, Angehrn, 1991a, b, Brännback, 1994, Walden et al, 1995). The systems are genuine decision **support** systems in that it is expected that the user will make the actual decisions. The system only supports the decision-maker by helping him/her to distinguish the relevant information from the trivial.

In developing these kinds of DSSs, that also can be named **knowledge-based support systems** (KSS), the process has to focus on the user and his/her needs. This is in no way taken care by conducting a few interviews, it requires a iteration process that can be very tedious and conflicting, but so very rewarding once the KSS has been completed. It requires teaching the users to not only use the KSS but also to deal with maintenance and updating. In other words we are looking for the type of commitment that Prahalad and Hamel (1989, 1990) describe concerning a firm's core competence and strategic intent. The KSS will also support a **dynamic** strategy making process, not only because it is thought to be used frequently, but because it will make the user focus on the key issues in strategic management thus resulting in the system being constantly verified and validated. We will have **active** decision support (Keen, 1987, Jelassi et al, 1987, Angehrn, 1991a,b). There are, of course, those that will warn you from activating the user too much by introducing end-user modelling (Gass, 1990). The KSS should also support a company's efforts in becoming an active learning organisation, which increasingly is seen as one of

the keys to a firm's future success (cf. Senge, 1990, Isaacs and Senge, 1992, March and Levinthal, 1993).

Changes in the business environment will no-longer make the KSS useless, provided that these options have been taken into account already in the development process, i.e. in choosing development tools and in constructing the system. A shift from rule-based systems to object-oriented can be seen, yet the rules will probably never disappear.

We can refer to at least one examples of a successful implementations of KSS - Woodstrat - that has been developed through iteration, that is modular, that has made the strategy making process indeed very dynamic, and that is being used (Carlsson and Walden, 1994, Walden et al, 1995, Carlsson and Walden, 1996). Woodstrat has been developed at the Institute for Advanced Management Systems Research (IAMSR) since 1992, thus the process is indeed tedious. In 1993 the author was involved in developing a prototype (MOCK - Many Options for Complex Knowledge) for a Finnish drug company (Brännback, 1993, 1994) however the company was very small and the strategy making process was not seen (by the company) as that complex as requiring any specific KSS, yet the elements for complexity did exist. Woodstrat, again, has been developed for the forest industry which in terms of size and volume makes the strategic decisions very complex. Therefore the company involved could easily see the benefits from implementing a KSS in their strategic management process.

Although these are only some scarce examples they are convincing in showing how modern KSS (DSS) should be developed and implemented and especially Woodstrat shows that KSS can have a significant impact in strategic decision-making. Even if MOCK never passed the prototype phase it was not rejected for reasons based on the characteristics and functionalities of the system, but because the company had not made a careful potentiality study, i.e. where they prepared to commit themselves in a way needed to guarantee a successful development and implementation process. The commitment both in terms of human and financial resources was insufficient.

Another very significant outcome of these two examples is that they have shown that the academic discussion is fruitless as such, it acquires flesh only after it has found support in empirical work (recall Elfring's and Volberda's description of the configurational school). It is also highly disputable whether carrying on an endless description and redescription of strategic management processes in terms of schools of thought will help companies finds means by which they can effectively solve their pressing problems. The real key to contributing to the theoretical and practical findings in strategic management is to work in close cooperation with companies. The development of KSSs is one good way, and here the iteration process is vital, because it will build the commitment on both sides. It will provide



the field of strategic management with new insights on managerial work and it will widen the use of KSS thus significantly contributing to the field of decision support systems. The important contribution to the field of DSS also lies in the orientation towards the fields of **organisational behaviour** and **cognitive science** that are very relevant to the field (Angehrn and Jelassi, 1993, Brännback, 1993) but that have previously to a very large extent been overlooked.

## 5. Conclusions

In this paper we have been reviewing the strategic management literature of 'the old days' and recent years. We have described a field that has long been searching for the holy grail and always seemed to have fallen short. We present different schools of thought which has been one way of trying to find the missing link in strategic management. We have shown fragmented classifications and lumped classifications, we have also presented some other ways of looking at strategic management, i.e. stakeholder approach and the competence-based competition approach. Finally we have then discussed the role of computers in this context and specifically that of DSS or KSS.

We have argued that many of the past problems with DSS and their failure came from technological short-comings, not so much from that the ideas and visions concerning DSS were bad. We have then discussed recent experiences with DSS with some examples. Our conclusion is that we do not need ten, seven, three or any other number of schools in strategic management, but that the configurational school serves as a meaningful basis for building DSS that will have an impact on decision-making in strategic management. What is more it will bring the fields of strategic management and DSS closer together. The strength lie in that with DSS strategic management will become heavily anchored in empirical data, and this is bound to bring new insight into the theories of strategic management.

Assessing the environment is the starting point in the process of competition. Assessing the environment is not like acquiring knowledge and judgement as simple as in a technical exercise. Rather it has to be regarded as a company becoming an open learning system.

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