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SEA and strategy formation theories: From three Ps to five Ps [☆]

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Abstract

A transition to environmentally sustainable societies should involve a significant and comprehensive — strategic — change. Much of the promise of SEA is associated precisely with its perceived capacity to facilitate such a strategic transformation by influencing selected 'strategic decisions'. This paper examines the potential effectiveness and limitations of such an approach in light of contemporary organizational strategy theories. Most of these theories separate 'strategies' from 'decisions' and also transcend the notion of strategies as formal plans, policies and programs (PPPs). Instead, they consider strategies as "five Ps", adding "Position", "Perspective", "Pattern" and "Ploy" to the "Plan". Lessons from organizational strategy formation give rise to the following challenges for SEA theory and practice:

1. How to assess and influence informal as well as formal aspects of strategic initiatives?
2. How to extend SEA 'beyond decisions' to address 'emergent strategies' where strategic action is not necessarily preceded by a decision?
3. How to ensure that knowledge provided as a result of SEA is strategically relevant and communicated to key players in strategy formation?
4. How to deal with an uncontrollable and unpredictable environment in which strategic initiatives unfold?
5. How to recognize those situations when SEA can have most strategic influence?

This paper takes a step towards examining these challenges by exploring the intellectual history of SEA in light of the main strategy formation theories and by identifying directions in which the SEA discourse may be further enhanced to meet these five challenges.

1. Is SEA strategic?

Is the adjective "strategic" essential for SEA? Or is it simply a convenient shorthand[1] to refer to policies, plans and programmes that undergo environmental assessment? We believe that "strategic" is a key attribute of SEA, which largely defines its promise and attractiveness as a policy tool. This is because 'strategic' resonates with the widely perceived need for a strategic change towards sustainable development (as described, e.g. by Raskin et al., 2002). However, there is a widespread perception that "Impact Assessment seems to be insufficient to attain the societal transitions that may be necessary for genuine sustainable development" (Noteboom and Teisman, 2003).

Why has SEA not been able to meet this challenge? And what, if anything, can be done to increase the 'strategic' impact of SEA? In this paper we examine both questions in light of organizational strategy formation theories. Such a perspective has been largely absent from SEA thinking[2] but is, in our view, relevant. Our rationale is largely intuitive: since SEA aims to promote a strategic change towards sustainability, it seems to be important for SEA scholars to understand what strategy is and how it is formed. Strategy formation theories provide an obvious starting point for this knowledge.

The term 'strategy' was first coined in relation to military operations to distinguish the art of conducting a war from the task of directing individual battles. The first book on strategy is believed to be "The Art of War" written by Sun Tzu about 400 B.C. (Sun Tzu, 1971). Many of its messages are still relevant to contemporary debates on strategy as we illustrate by using Sun Tzu's quotes as epigraphs to sub-sections in this paper. The concepts of strategy were theoretically refined by many thinkers, especially after the Napoleonic wars (e.g. by Clausewitz, 1989) and eventually extended to encompass non-military means of achieving geopolitical goals (the so-called "grand strategy", Liddell Hart (1967)). After World War II, the idea of strategy was developed in relation to the corporate sector and this is where most of the strategy formation research and publications has been produced. This extensive body of knowledge, and especially the meta-analysis provided by Mintzberg et al. (1998) in their 'Strategy Safari' is what we primarily use in the present article.

We start with a brief overview of strategy formation theories. Subsequently we explain how these theories link with the contemporary SEA discourse and where they go beyond it. We proceed by discussing the applicability of this approach to SEA and conclude by suggesting how thinking in terms of 'strategy-making' might enrich SEA.

2. From 3 Ps to 5 Ps: strategy formation theories

Though some strategy theories limit the notion of strategy to policies, plans and programmes (PPPs), most extend this concept beyond the "three Ps". For example, Mintzberg (1987), speaks

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[1] In various legal contexts "strategic" is not used consistently. For example, the EC Directive 2001/42 and the Kiev Protocol to the Espoo Convention have similar scopes yet the latter uses "strategic" to describe SEA and the former refers simply to "environmental assessment."

[2] For exceptions see e.g. Bina (2003), Noble (2000).

Table 1
Ten schools of strategy theories

Design school	Strategy formation as a process of conception. Strategy is a unique planned *perspective* conceived by senior leadership based on an ad hoc analysis of external and internal factors.
Planning school	Strategy formation as a formal process. Strategies are *plans* decomposed into programs resulting from formal planning procedures.
Positioning school	Strategy formation as an analytical process. Strategies are planned generic *positions* but also *ploys* to defeat competitors. Positions are based on detailed analysis of markets and industry structures. Highly integrated corporate activity systems support focus on selected positions.
Entrepreneurial school	Strategy formation as a visionary process. Strategies are personal *perspectives* of visionary leaders conceived largely intuitively and adjusted when necessary.
Cognitive school	Strategy formation as a mental process. Strategies are mental *perspectives* reflecting 'constructed reality' in leaders' minds.
Learning school	Strategy formation as an emergent process. Strategies are unique *patterns*, constantly evolving as a result of learning by leaders and others in an organization.
Power school	Strategy formation as a process of negotiation. Strategies are political *patterns* and *positions* as well as *ploys*. The micro-power school emphasizes internal politics as the basis for a strategy. The macro-power school considers strategy as a negotiated position and a ploy to defeat competitors.
Cultural school	Strategy formation as a collective process. Strategies are collective *perspectives* reflecting dominant ideologies, collective cognitive maps and narratives.
Environmental school	Strategy formation as a reactive process. Strategies are specific *positions* (ecological niches) developed as a result of evolutionary adaptations of organizations to ever changing and uncontrollable external circumstances.
Configuration school	Strategy formation as a process of transformation. Strategies can be are formed by different processes depending upon the internal and external context (or stage in an organization's evolution).

Source: Mintzberg et al. (1998) pp. 356–357.

of 'five Ps', of which only the first can be easily connected to the PPPs of the traditional SEA discourse:

· Strategy is a Plan — a consciously intended course of action, a set of rules to deal with the situation;
· Strategy is a Ploy — a scheme intended to outmaneuver opponents and strengthen useful alliances;
· Strategy is a Pattern — in a stream of actions, consistency in behaviour (whether or not intended); here strategies result from actions, not designs;
· Strategy is a Position — locating an organization in its Environment[3]; its 'ecological niche', or, in military terms, literally a position on a battlefield;
· Strategy is a Perspective — an ingrained way of perceiving the world; 'strategy in this respect is to the organization what personality is to the individual'.

Strategy-making theories seek to explain how these five aspects emerge and change within institutions. Mintzberg et al. (1998) classify such theories into ten schools as summarized in Table 1 (see Table 6 in the Annex for more details concerning the schools).

According to Mintzberg et al. (1998), some schools are more influential than others in shaping management practice and drawing support from academics however, the standing of the various schools has changed over time. The Planning and Design schools were relatively prevalent in the 1970s, but currently their popularity is waning. Recently, by far the most influential has been the Positioning School established in the 1980s, although it is currently also becoming less

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[3] In strategy formation theories 'the environment' means all factors external to the organization. Henceforth we will denote this term with the capital 'E' to distinguish it from the (natural) environment dealt with by SEA.

fashionable. Most of the remaining seven schools started to attract followers in the late 1980s. The most dynamically growing are the Configuration and the Learning Schools, closely followed by the Power and the Cognitive Schools. This classification is not the only one, and contemporary literature often seeks to bridge gaps between the schools: however, for the present analysis, we shall set these complexities aside.

Of the several dimensions of differences between the ten schools we shall focus on the following five which we believe are of most relevance to SEA.

A. The distinction between 'prescriptive' and 'descriptive' schools, i.e. those that prescribe how an 'ideal' strategy should be formed and those that describe how 'actual' strategies are formed. This should be important for all SEA practitioners and scholars who have ever contemplated the difference between 'good' and 'real' planning processes.

B. The divergent views of the nature of strategy formulation as either formal or informal. Informal elements in strategy formation have significant implications for transparency, rationality and other features important for integration of SEA.

C. The divergent views of the nature of strategy formation[4] as either deliberate or emergent. Although SEA's central premise is that strategic initiatives are primarily deliberate, recognizing emergent elements are important for SEA effectiveness, especially in the context of SEA follow-up.

D. The divergent views on the central actors in strategy formation. In order to have an influence, SEA should be recognized and accepted by such actors who may not necessarily be those in formal decision-makers' positions.

E. The divergent views on the role of knowledge in strategy formation. This is especially important for SEA which seeks to affect strategic initiatives by generating and communicating additional information.

The perspectives of the ten schools on these issues are summarized in Table 6. In the following sections we explain each of these five issues in more detail in relation to the contemporary SEA debate.

3. Strategy formation theories and SEA discourse

3.1. Mainstream SEA and the Planning School of strategy formation[5]

Before proceeding with exploring the parallels between different streams of SEA thought and strategy formation schools, it is useful to outline the similarity between the mainstream SEA thinking — as expressed in guidelines, textbooks and much research literature — and the so-called Planning School of strategy formation.

Though some premises and practice of the Planning School had been used — especially in centrally planned economies — since the mid-1930s, it really took hold in the West in the 1960s, just before the rise of Impact Assessment. It continues to command a sizeable part of corporate

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[4] We distinguish between 'strategy formulation', i.e. its articulation of a strategy in planning and decision-making and 'strategy formation' i.e. emergence of the actual strategies pursued by organizations.

[5] The analysis of the Planning School in this section are based on 'The Rise and Fall of Strategic Planning' by Mintzberg (1994).

management literature and strongly influence practices of public organizations. The key premises of the Planning School are:

1. an effective strategy should be formally articulated in a document — a plan — prepared prior to the start of action, commanding the commitment of the entire organization including the top management, and rigorously implemented;
2. such a strategy/plan should be analytically sound i.e. based on thorough analysis, comparison of alternatives, articulation of strategic goals and their decomposition into specific measurable objectives, targets and indicators;
3. such a strategy/plan should be integrated in the sense that all objectives should be consistent with each other and with planned implementation measures, which should also not result in undesirable side-effects. Resources, responsibilities, monitoring and feedback mechanisms should also be coordinated.

There are obvious similarities between these premises and common SEA principles, such as production of a report with ex ante analytical assessment and consideration of environmental effects on a par with social and economic ones. Moreover, these overarching principles give rise to many more specific SEA principles and concepts such as transparency, tiering, and integration (IAIA, 2002). This is not surprising because the Planning School and the Impact Assessment ideology seem to have common roots in the rationalist planning theories.

Since the heyday of the Planning School in the 1960s and 1970s, both the feasibility and desirability of this approach to strategy-making have been subject to criticism. To begin with, there has been little empirical evidence that practising strategic planning results in organizational success. At the same time scholars and practitioners (e.g. Mintzberg (1994) and extensive literature cited therein) pointed out several conceptual deficiencies of this approach which can be summarized as follows:

— accurate analysis, on which strategic plans should be based, is rarely if ever available due to uncertainties and unpredictability of future conditions;
— both top leaderships and line managers (or field bureaucrats in the public sector) often feel that strategic plans are irrelevant to their concrete problems and therefore tend to ignore them both in day-to-day practice and in strategic decision-making;
— strategic plans fail to support innovative solutions and genuine change necessary for strategic advances; instead they tend to conserve the status quo, favour incremental change and stifle creativity.

The objective of this criticism was not to dismiss planning, but to limit the expectations that it can be a substitute to strategy-making. Instead of attempting to define strategies, scholars argued, strategic plans should aim to articulate and communicate already formulated strategies as well as provide means for controlling their implementation.

Many of the strategy formation schools considered below have developed in response to such criticism of the strategic planning approach. Likewise, SEA scholars turned to theories which would help SEA to address similar problems, i.e. uncertainties, unwillingness of decision-makers to listen to SEA findings, and the apparent inability of SEA to facilitate or even conceive a genuine change. While these trends in SEA thinking are considered below, it is useful to keep in mind that the mainstream SEA discourse and practice are still very much in line with the 'strategic planning' approach of the Planning School.

3.2. Descriptive and prescriptive approaches

> *A general who listens to my calculations, and uses them, will surely be victorious, keep him; a general who does not listen to my calculations, and does not use them, will surely be defeated, remove him.*
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> Sun Tzu, The Art of War.[6] Chapter One: Calculations.

Mintzberg et al. (1998) draw a distinction between 'prescriptive' and 'descriptive' schools of strategy formation. The former recommend ideal, or preferred, strategy-making processes that organizations should follow. The latter focus on studying the actual strategy development processes. Naturally, each systematic theory contains some elements of both approaches, but Mintzberg and co-authors consider the Design, Planning and Positionchi Schools as being primarily prescriptive and the remaining seven schools as being primarily descriptive. The Configuration School they consider closest to a hybrid, since it is descriptive when it concerns stable periods of organizational evolution and prescriptive when it comes to inducing organizational transformations or transitions.

One can identify a similar distinction in the SEA discourse. Most of the SEA literature, particularly textbooks and guidelines, tends to be prescriptive in relation to both the SEA process and those 'good planning processes' which it should influence. 'Good planning processes' are commonly associated with being, for example, systematic (formal, explicitly rational), integrative, and transparent, i.e. possessing those qualities which facilitate SEA integration. There is also a proliferation of 'benchmarks', 'principles', 'performance' and 'quality criteria' for SEA itself.

At the same time, some of the recent SEA literature calls for systematic examination of real rather than ideal planning and decision-making practices (e.g. Nilsson and Dalkman, 2001; Dalkmann et al., 2004). "SEA must learn how policy making works" (Nitz and Brown, 2001) is the motto for this stream of research which signifies a shift from a prescriptive to a descriptive view of the SEA context. Nevertheless, a review (Naydyonov, 2005) of 18 recent SEA theory articles from three leading Impact Assessment journals concluded that the vast majority of them viewed the planning context in terms of the Design, Planning or Positioning Schools of strategy formation, i.e. precisely those schools which Mintzberg et al. (1998) classify as "prescriptive". This might mean that the focus of the SEA research community is still too much on the ideal rather than on actual strategy formation processes although this seems to be changing (which may eventually stimulate more interest in descriptive strategy formation theories in the SEA community).

3.3. Formal and informal strategy formulation

> *One who is prepared and waits for the unprepared will be victorious.*
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> Chapter Three: Planning Attacks

Strategies are typically articulated in various documents and statements, for example in policies, plans and programmes. In SEA studies, the processes of preparing and endorsing such documents are called 'planning' or 'decision-making'. Organizational strategy theories use the term 'strategy formulation'. Both SEA discourse and strategy theories encompass a debate on the nature of such processes, particularly on whether it is formal or informal.

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[6] This and further epigraphs are from the "Art of War" by Sun Tzu as translated by Sonchi.com (Tzu (1999).

By 'formal' we mean processes which follow a priori established rules.[7] In contrast, in informal processes, rules are not set or can be changed at any moment. Such informal processes can also be called 'messy' or 'chaotic'. The earliest concepts of Impact Assessment, as expressed, for example, in the US NEPA, contained few formal elements, most notably production of an Environmental Impact Statement (EIS). Subsequently, formalization of both Impact Assessment and its object was increasingly stressed in the EIA and SEA literature and practice. The mainstream SEA thinking considers a strategic decision as the outcome of a structured, formal process divided into distinct standard stages (such as "situation analysis", "problem formulation", "objectives setting", and "comparison of alternatives"). SEA should be smoothly integrated into this process so that it can influence its outcomes, preferably at the earliest possible stage (e.g. UNECE and REC, 2006, 28).

There has been a two-pronged challenge to this idea of formal planning and decision-making within SEA thought. The first challenge focused on the sequence of and connections between steps or stages of planning. The second challenge focused on the nature of those steps, or individual decisions comprising the planning process. Significant evidence was cited pointing to the fact that each planning process is somewhat unique and, thus, SEA procedures should be custom-made. Such approaches as ANSEA (Dalkmann et al., 2004) require examining the decision-making process prior to designing an appropriate SEA procedure. However, this "tailoring" of SEA to fit the planning process also faces certain limitations. Even the 'tailor-made' SEA or ANSEA presume that it is possible to establish a priori rules for a planning process. However, in practice planning rules are often changed during the process, with important decisions possibly taken at any time, not necessarily at specified 'windows' which of course makes integrating SEA more problematic.

Secondly, a number of studies asserted that what happens in making individual decisions cannot be formalized either. This affects SEA integration even in those situations when decision-making windows can be clearly identified. This stream of SEA literature, e.g. Nilsson and Dalkman (2001) and Nitz and Brown (2001), pointed to decision-making models such as Simon's (1957) "bounded rationality" and Lindblom's (1959) "incrementalism", which stress the unique character and context-dependency of decision-making and thus question the potential relevance of any analysis conducted by generic rules.

In this regard, corporate strategy formulation theories exhibit many parallels to that of SEA thinking (Table 2). The earliest Design School, although largely informal, clearly stressed a few a priori rules of strategy formulation, such as the role of the top management and analysis of strengths, weaknesses, opportunities and threats (SWOT). In the Planning School, strategy-making is seen largely as a set of formal procedures for setting objectives, analyzing alternatives and implementation measures. The Positioning School shifts the emphasis from formal planning procedures to (primarily economic) analysis which should underlie objectives-setting (Porter, 1980) and to system analysis which should ensure a 'fit' between those objectives and an organization's activities (Porter, 1996). Both analyses have become highly formalized and standardized, especially in the practice of 'strategic consulting', thus also formalizing strategy formulation processes in many organizations.

In the remaining schools, strategy formulation is seen more as a unique and context-specific process rather than as a standard and formalized one. The Entrepreneurial, Power, and

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[7] In the SEA literature 'formal' is often equated with 'rational'. In our analysis we separate these two characteristics. Whereas 'formal' means 'following the rules', by 'rational' we mean 'based on reason'. Rational processes can be explained, (possibly ex post), but do not necessarily follow a priori established rules. Modern social science and psychology can explain and therefore render 'rational' decisions that do not follow formal logic. It is now common to refer to 'different types of rationality' rather than to 'irrational' behaviour. Thus, formality and rationality are two independent characteristics. We consider the former primarily in this section and touch upon the latter in the sections concerning the role of knowledge in strategy formation.

Table 2
Formal and informal strategy formulation in SEA and strategy theories

SEA discourse	Strategy formation theories
Early EIA concepts and practice: ad hoc approach to incorporating environmental considerations in decisions	Design school: ad hoc approach to strategy formulation
Mainstream EIA and SEA thinking and practice: emphasis on formalization of Impact Assessment (IA) processes and their integration with planning and decision-making	Planning and Positioning schools: complex and formalized strategy formulation processes
Contemporary SEA thinking: tribute to informal nature of real planning and decision-making in many situations	Entrepreneurial, Cognitive, Power, Learning, Cultural and Environmental schools: stress 'messy' strategy formation

Environmental Schools make it clear that strategic decisions can be made at any moment, not only in formally prescribed situations. These decisions reflect unique managerial insights and visions (Entrepreneurial School), power balance, negotiations and maneuvering (Power School) or changes in external circumstances (Environmental School). Other schools stress that decision-making derives from cognitive (the Cognitive School) or learning processes (the Learning School) or organizational culture (the Cultural School). The Cognitive and Learning Schools draw from the same sources (e.g. Simon, 1957; Lindblom, 1959) as those SEA theories (e.g. Nilsson and Dalkman, 2001) that seek to explain non-formalized elements in decision-making.

However, somewhat in contrast to the SEA discourse, many strategy schools pay more attention to how strategy is formed rather than to how it is formulated. Their logic is that if decisions are shaped by organizational contexts then those contexts are of higher interest to strategy formation studies than the decisions themselves. This is where the distinction between deliberate and emergent strategy formation theories largely lies, as explained in the following section.

3.4. Deliberate and emergent strategy formation

> *There are commands not to be obeyed.*
>
> Chapter Eight: Nine Changes

Are strategies deliberate (i.e. first formulated and then implemented) or emergent (when implementation cannot be fully separated from formulation)? Most of the SEA discourse adheres to the former view. In other words, SEA proceeds from the premise that strategic decisions precede and guide action.

A strategy is truly deliberate when it is formulated in a 'strategic decision' which is subsequently closely adhered to until superseded by another 'strategic decision'. This perspective largely shaped early EIA theory and practice with its emphasis on attaining environmental goals through shaping individual 'environmentally significant decisions'. A view of strategy formation as a deliberate process is, in fact, very central to the Impact Assessment paradigm, as reflected in its motto 'Think first – act second!' as well as in the widely cited principle of prevention.

However, contemporary SEA approaches reflect the evidence that decision-making often consists of a series of decisions rather than of a single decision. In order to influence those multiple-point decisions, the SEA literature has suggested various approaches for integrating SEA with planning so that SEA results can be considered not just in one decision, but in the entire sequence of connected decisions (e.g. UNECE and REC, 2006, 28). In addition, the SEA discourse contains the concept of tiering also reflecting the same notion that strategies are formulated and enacted not in one single step, but in a series of steps leading to each other. After

higher-level PPPs are adopted, they are implemented, interpreted and elaborated in lower-level decisions. In order to be effective, Environmental Assessment (SEA and EIA) should be smoothly integrated with this whole decision-making hierarchy. Finally, in order to deal with uncertainties, unexpected circumstances and deviations from prior decisions, the SEA literature increasingly emphasizes SEA 'follow-up', designed to monitor whether implementation is in line with strategic decisions and objectives (Partidario and Arts, 2005).

Can all these developments be considered as steps towards the idea of an emergent rather than deliberate strategy formation? Yes, but only to a limited extent. On the one hand a strategy indeed emerges as we proceed from one decision to another. On the other hand, if these decisions are 'nested' in the sense that later or "lower-level" decisions do not contradict earlier or "higher-level" ones, the strategy, indeed, is mostly influenced by earlier decisions which can therefore be called "strategic". Thus, in hierarchical systems, strategy is seen as deliberate, shaped by higher-level decisions.

This belief in the deliberate character of strategy formation is the basis for many prescriptive features of the SEA theory, such as the emphasis on conducting SEA 'at the earliest possible stage' of planning (IAIA, 2002; UNECE and REC, 2006, 16), the intention to extend SEA to policies and legislation (believed to be at the higher-level and hence 'more strategic' than plans and programmes), as well as the fundamental assertion that SEA has more strategic potential than project-level EIA (Lee and Walsh, 1992). This framework lends legitimacy to the whole SEA project, which aims to influence 'strategic decisions' and thus affect the whole range of lower-level decisions and implementation activities without focusing on details.

This line of reasoning may be neglecting an important aspect of strategy formation only marginally reflected in the SEA literature. Noteboom and Teisman (2003) remark that 'decision-making processes [are] neither linear nor phase-wise' which gives rise to the dilemma that they call a 'paradox of timing': Impact Assessment is 'either too late or too early'.

> 'It is too late because the […] stakeholders already prefer a specific solution [by the time IA is conducted], and it is too early because the problem […] is always redefined during the decision-making process, resulting in an irrelevant assessment.'

The possibility that the problem (hence the objectives and choice of alternatives) may be redefined at any moment and that the outcomes of decisions may be revisited by later decisions leads us to the notion of emergent strategies. This essentially means that it is difficult to establish a priori when a truly strategic decision will be made. If a strategy is emergent, all decisions: early or late, higher or lower-level — may, in principle, be 'strategic'. Furthermore, in emergent strategies decision-making cannot be fully separated from implementation (i.e. action), because any action may, in principle, lead to change of strategies formulated in earlier decisions. What makes a particular decision or action strategic is not its "level" or timing, but some other qualities. This is at the roots of key difficulties with conceptualizing SEA follow-up (Cherp et al., in press).

The issue of emergent strategies in relation to Impact Assessment was most consistently addressed by the concept of Adaptive Environmental Assessment and Management (AEAM) proposed by Holling (1978). Holling starts with describing the fundamental inability of ex ante EIA to deal with emergent phenomena and suggests a shift of focus from attempting to formulate 'environmentally sound decisions' to creating interactive management systems based on our evolving understanding of reality. However, the AEAM approach has not been extensively reflected in the SEA discourse, possibly precisely because of its inherent scepticism regarding the viability of deliberate strategies. The views on the nature of strategy formation in the SEA and related discourses are summarized in Table 3.

Table 3
Strategy formation in the Impact Assessment thinking

Early EIA	Focus on one-point "authorization" (i.e. the permit-granting decisions by "competent authorities").
SEA	Recognition that a decision is not a one-point occasion, but a process with several stages, into which SEA needs to be integrated.
SEA and EIA follow-up	Recognition that implementation may differ from what was decided and, therefore, management systems and plans are needed to follow-up the decisions made.
SEA tiering	Recognition of the need to ensure that lower-level decisions and actions should be framed by SEAs of higher-level decisions.
AEAM	Recognition that the environment is inherently unpredictable and therefore ongoing assessment should be combined with constantly adjusted management responses.

SEA thinking shares the view of strategy-making as a deliberate process with several strategy formation schools: Design, Entrepreneurial, Cognitive and Positioning. In all of these schools strategic decisions precede action and shape strategies. The Planning School decomposes 'strategic decisions' into various formalized stages of the 'planning process', and emphasizes the idea that lower-level decisions are nested or framed by higher-level ones. The deliberate view of strategy formation has been criticized on a variety of grounds, especially citing the vast evidence that formally conceived organizational strategies are rarely implemented and, if implemented, are not always successful (e.g. see Mintzberg, 1994).

Three other influential schools — Learning, Environmental and Cultural — emphasize 'pattern' and 'perspective' over 'plan' and 'position'. In their view, strategies emerge in response to external factors and/or internal organizational dynamics. For example, according to the Learning School strategies are shaped as a result of acquiring and assimilating new knowledge within an organization (a process which may or may not be connected to planning and decision-making). In the Environmental School, strategies result from organizational adaptation to changes in the external Environment rather than from prior decisions. In the Cultural School, articulated strategies are merely symbols of ingrained patterns and perspectives.[8] The Power School emphasizes the fifth "P", the 'ploy'. A ploy is deliberate and pre-emptive, but should at the same time respond to activities of allies and opponents and is thus also 'emergent'. Finally, the Configuration School considers that in most situations organizational strategies are emergent; however, in certain periods of rapid change, called transformations, strategies may be deliberate.

The distinction between deliberate and emergent strategies is closely connected to another issue: the nature of the central actor in strategy formation. If a strategy is deliberate, then those who formulate it are clearly central actors. If a strategy is emergent, those who 'implement' it are also very important, as considered in the next section.

3.5. Strategic actors

> *One who knows how to unite upper and lower ranks in purpose will be victorious.*
> Chapter Three: Planning Attacks

Key actors in strategy formation should ideally be both the owners and the clients of the SEA process. Contemporary SEA literature almost universally agrees that the proponent, experts, competent authorities and various stakeholders ('the public') should provide input into the SEA

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[8] In this sense Mintzberg et al. (1998) consider the Cultural School's view of strategy formation as 'deliberate (though subconscious)'.

process, whereas its findings should primarily be utilized by the proponent and competent authorities ('decision-makers') who are the main strategic actors.

Table 6 shows that various schools of strategy formation contain different views on who is the central actor in the strategy formation process. In the first five schools, these are well defined individuals, usually at the top of an organizational hierarchy. The Design School stresses the role of the CEO, whereas the Entrepreneurial and Cognitive Schools focus on 'leaders' (in principle, a leader does not need to be the CEO). The role of a leader is also emphasized in the macro-Power School, where it is very similar to the role of a general-*strategos* in truly military strategies. The Planning and Positioning Schools stress the role of planners and analysts. SEA's attention to 'decision-makers' and its heavy reliance on experts are very much in line with these five schools.

However, the other five schools decisively shift the emphasis away from clearly identifiable leaders and experts. The micro-Power School focuses on those who command power (often through informal networks of influence) in organizations. The Learning School identifies strategy-makers through their learning abilities. In the Cultural and Environment Schools the very presence of a strategy formation actor is questioned. The roles of leadership are described respectively as 'symbolic' and 'passive'. The Configuration School, essentially, stresses that the identity of the central strategic actor depends upon the type of organization and the stage in its evolution. For example, younger organizations are often driven by charismatic leaders, more mature ones are guided by technocracies and, in periods of transformation, strategic actors may emerge from the rank and file.

Thus, when strategy formation is considered as largely deliberate, central actors can be more easily identified, usually in the position of leadership. This view is compatible with the mainstream SEA discourse and practice. In those schools that view strategy formation as an emergent process, strategic actors are more dispersed or are difficult to identify. There is some recognition of this fact in contemporary SEA thought. For example, Deelstra et al. (2003) note that strategic decisions emerge as a result of negotiation between various groups who use SEA results for their own purposes. They also advocate explicitly targeting wider 'networks' of actors in SEA but their view is certainly not widespread among the SEA community.

In summary, strategy-making theories point to complexities, which are rarely accounted for in SEA, in identifying central actors in strategy formation. Likewise, these theories point to diverse types of knowledge that such actors may need.

3.6. Strategic knowledge

> *One who knows the enemy and knows himself will not be in danger in a hundred battles…*
> Chapter Three: Planning Attacks

> *If you know the Heaven and the Ground, the victory is complete…*
> Chapter Ten: Ground Formation

SEA is an assessment tool. It seeks to promote sustainable development by generating knowledge and providing it to strategic actors. But what knowledge is most relevant to strategies: of 'the enemy', of 'yourself', or of 'the Heaven and the Ground', i.e. external conditions? And what role does such knowledge play in strategy formation?

In Sun Tzu's terminology, Environmental Assessment has been primarily pre-occupied with knowing 'the Heaven and the Ground', or 'the Environment', in which proposed activities will take place, more specifically, the natural environment. However, the view on the character of such

knowledge and on the role it should play in decision-making has evolved over the last decades (Table 4).

In pre-IA planning, 'strategic decisions' were supposed to consider the natural environment alongside other factors in a comprehensive but ad hoc, simple, analysis. This was based on the notion of the predictability and relative simplicity of the natural environment which could largely be controlled by human intervention. Impact Assessment's main message was that the knowledge of expected impacts, costs and benefits of proposed actions should be more systematic and rigorous in order to predict and prevent unwanted consequences. IA advocates recognized that the natural environment is complex rather than simple and that there may therefore be both intended and unintended effects of strategic decisions. Early IA focused primarily on effects rather than on aims of proposed actions. In contrast, the proponents of so-called objectives-led SEA suggested that goals of strategic initiatives should also be harmonized with 'environmental and sustainability objectives' (e.g. UNECE and REC, 2006). According to this approach the knowledge of the natural environment was even more important since it would dictate the choice of strategic objectives, not only implementation measures.

The already mentioned AEAM questions not only the controllability, but also the very predictability of the natural environment. AEAM recommends that instead of trying to predict environmental consequences of proposed activities or analytically define environmentally-relevant objectives we should focus on accumulating knowledge about environmental systems through monitoring, observation and trial-and-error. We should then incorporate the lessons derived in this way into management approaches.

Somewhat related to AEAM are recent SEA publications that articulate organizational learning as a key outcome of SEA taking the view that 'effective IA amounts to creating a learning process among [policy] networks' (Deelstra et al., 2003, 519). In this perspective 'knowledge may generate new insights and views for the involved actors, thus, changing their perceptions and problem definitions'. (ibid) There is a notable shift in this position from the idea of a single objective truth that informs the 'right' strategy to a more complex interaction between various actors and 'stepwise' generated knowledge which results in gradual emergence of strategy.

Table 4
Relevance of knowledge of external environment to strategies in the SEA discourse and selected strategy formation schools

SEA discourse	Role of environmental knowledge in decision-making	Parallel thinking in strategy formation schools
Pre-IA planning	The planner integrates the environment on an ad hoc basis.	Design school: strategies are based on semi-formal (SWOT) analyses
Impact Assessment	Intended and unintended effects should be evaluated to choose optimal implementation options.	Planning school: strategies comprise detailed analysis of effects and comparison of alternatives
Objectives-led SEA	The analysis dictates not only implementation options, but also the objectives.	Positioning school: strategic objectives are based on the analysis of external and internal factors
AEAM	The environment is not predictable and should be responded to in a flexible manner with constant monitoring and adaptation.	Environmental school: strategy is shaped by largely unpredictable but comprehensible external circumstances
Learning perspective on SEA	Environmental knowledge is effective only in so far as it facilitates learning of various actors in a 'stepwise manner'.	Learning school: strategy is formed as a result of learning within the organization

Strategy formation theories also deal with the role played by the knowledge about 'the Environment' although by this term they mean all external factors rather than only the natural environment as in SEA.

The Design School recommends basing strategies on simple SWOT-type analysis. It proceeds from the view that the external Environment is predictable and comprehensible to corporate leaders. The ad hoc analysis here plays a supportive function to the 'wise men's' judgment and expertise. This echoes the 'pre-IA' approach to planning.

The Planning School does not question the assumption that various factors are comprehensible and predictable, but stresses their great complexity. It would be difficult for a simple analysis to avoid errors, take into account all the factors and make sure that various activities are fully integrated and do not lead to undesirable impacts. Therefore, the Planning School supplements (in the extreme case replaces) managerial insights by meticulous calculations of planners. It emphasizes forecasting, analysis of costs and benefits, comparison of alternatives and examination of implementation resources and capabilities. At the same time strategic goals and objectives are not normally analyzed in the Planning School, they are considered as given. This is very similar to the mainstream Impact Assessment discourse which, as we already mentioned, is conceptually strongly linked to the Planning School.

This last assumption is changed in the Positioning School, where analysis dictates not only the choice of implementation measures (as in the Planning School) but also strategic goals themselves. The Positioning School assigns special importance to analysis of external factors: markets and competition structures. An organization cannot control these factors, but should rather 'fit' or find its 'niche' under given conditions. The objectives are dictated by the external Environment. This parallels the central message of objectives-led SEA.

The parallel can also be drawn between AEAM and both the Environmental and the Learning Schools of strategy formation. The Environmental school does not believe that an organization can have a viable strategy unless it is constantly adapted to the changing Environment.[9] The Learning School shifts the attention from knowledge per se to the process of obtaining and utilizing it in organizations which echoes the way learning is discussed within the SEA academic community.

So far we have only discussed, in Sun Tzu's terms, the knowledge of "Heaven and Ground", i.e. the natural environment in SEA and the external Environment in strategy formation theories. The SEA theories are rather thin regarding the two other strategic factors mentioned by the ancient Chinese: 'yourself' and 'the enemy'. As already mentioned, SEA discourse often advocates knowledge of planning and decision-making contexts in which SEA is conducted (which may be related to 'knowing yourself'), but very little guidance is available on how such knowledge can be obtained, processed or used. Even less is said about knowing 'the enemy' which can probably be interpreted as unsustainable forces affecting the strategic initiative in question.[10]

In contrast, this type of knowledge plays a central role in most strategy formation schools. Already in the Design School the SWOT analysis or similar informal methods should analyze internal as well as external factors. The Positioning School stresses analysis of competencies,

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[9] The definition of 'the Environment' here may be even more specific. E.g. '*Organizations [...] respond to an environment that consists of other organizations responding to their environment, which consists of organizations responding to an environment of organizations' responses.*' (DiMaggio and Powell, 1983).

[10] Though some SEA do contain analysis of unsustainable 'drivers' and 'trends' as in the integrated assessment of the Czech National Development Plan (Dusik, 2005).

resources and 'activity systems' of both yourself and 'the enemy' (i.e. competitors) (Porter, 1996). Internal factors rather than external environment play a key role in the micro-Power, Cultural and Cognitive schools. "Knowing yourself" assumes the highest importance within the Configuration School which asserts that the approach to strategy formation largely depends upon the type of organization in question. Similarly, knowing "the enemy", is reflected in the Design and Positioning Schools, but it is the macro-Power school which makes the knowledge of business adversaries and allies paramount to the strategy formation.

Let us finally consider the *use* of (any) knowledge as portrayed by SEA and strategy formation theories. Mainstream SEA thinking adheres to the idea that objective information can be understood and acted upon 'rationally' by strategic actors. Some contemporary publications challenge this notion invoking theories of 'bounded rationality' (Nilsson and Dalkman, 2001) as an explanation of decision-makers' inability to take in SEA findings. This is paralleled by strategy formation theories, where in Design, Planning, Positioning, Power and Environmental Schools knowledge is used 'rationally' in the sense that key actors are fully capable of assimilating information. In the Learning School, the ability to absorb information by 'learning networks' is constrained and conditioned by their current status. In the remaining schools the rationality of strategic authors is questioned more seriously. In the Entrepreneurial and Cognitive Schools the strategy formulation processes occur 'in the mind of a leader'. They take (often non-verbal) forms of visions, intuitions or mental maps. Knowledge which is relevant to these types of processes is largely tacit, implicit knowledge. External information can be influential only if it can be easily related to such knowledge. The message from the Cultural School is similar, except that narratives, myths and symbols here are collective rather than individual. Without relating to these narratives, an analytical message may easily be lost.

In summary, strategy formation theories point to diverse types of knowledge that is relevant to strategy formation, giving special emphasis on the knowledge of external conditions ('the Environment'), internal competences and resources ('yourself'), and adversaries ('the enemy'). According to different theories, such knowledge may be used in more or less formal way or simply be ignored if it is not assimilated by right strategic actors. SEA, as an instrument of knowledge management in strategy formation processes, should derive important lessons from these insights.

4. Applicability of organizational strategy theories to SEA issues

The previous section identifies parallels between the SEA discourse and organizational strategy formation schools. However, our discussion can only enrich SEA thinking if strategy theories are applicable to strategic initiatives which typically undergo SEA. Moreover, the usefulness of this analysis depends upon the relevance of strategy formation issues to sustainable development — the main focus of SEA. The current section addresses both linkages: (a) between strategy theories and the public sector where SEA is primarily practised and (b) between strategies and sustainable development.

To start with, strategic initiatives in the public sector have much in common with corporate strategies. Public authorities are organizations shaped by their missions, leaders, cultures, and capacities as well as external factors. Similarly to corporations, they have to respond to the changing Environment, forge alliances, outwit competitors in attracting funds, investments and jobs, and maximize their influence. The idea of "new public management" signifies the 'business-fication' of public authorities and underlines similarities between public authorities and corporations. Moreover, political and corporate leaders often belong to the same networks,

receive similar education, and learn the art of "strategic management" from each other (DiMaggio and Powell, 1983). Mintzberg (1994) describes how key planning ideas (and, we may add, associated notions of cost–benefit analysis and other appraisals eventually evolving into Impact Assessment) migrated from the corporate world to government. He also extensively cites Wildavsky (1973) and other public policy scholars who had significantly contributed to understanding the 'planning' dimension of strategy formation. Meanwhile Michael Porter's 'positioning' theories are as popular in analyzing regional and national competitiveness as in analyzing corporate strategies (Porter, 1990) (for example, one of the authors has recently been involved in conducting a sustainability assessment of a regional development strategy formulated in striking accordance with Porter's school (Cherp, 2006)).

On the other hand, there are obvious differences between corporate and public sector strategies. Some of these differences are generic— for example whereas the private sector concentrates largely on profit-making, the public sector aims at more diverse objectives. Other differences relate to specific types of strategic initiatives. Public plans and programmes resemble corporate strategies in the sense that they are formulated and implemented in well-defined organizational frameworks. However, they often lack the independence and flexibility in their choice of objectives and implementation measures which is present in the private sector. On the other hand policy processes are similar to corporate strategies in their potential ability to generate genuine radical changes, but they do not unfold in clear organizational hierarchies as in corporations. 'In governance networks, power is more evenly distributed over actors and changes over time' (Noteboom and Teisman, 2003). The public sector's 'development strategies' (including the currently popular 'strategies for sustainable development') may be viewed as a third type of strategic initiatives, perhaps the closest to corporate analogues. We turn to this issue once again in the Discussion section.

But if there are significant similarities between public and corporate strategic initiatives, why is SEA virtually not used in the private sector?[11] A hint may be given by the observation that SEA is primarily practised in relation to 'administrative' (i.e. plans and programmes) rather than 'political' (i.e. policies) strategic initiatives (Sadler, 2005). Because 'strategic planning' is weakened in contemporary corporations there is little room left for meaningful SEA, which is often considered to be of greater use to customers rather than decision-makers (Jay and Marshall, 2005). This may have to do with the demise of the Planning School of corporate strategy formation so that corporate plans nowadays support communication and control rather than strategy-making. Simply speaking, the private sector sees little value in SEA so far as strategic issues are concerned. On the other hand, SEA provides 'accountability through enforced transparency' (Noteboom and Teisman, 2003) which is more important in the public than in private sector. In other words, SEA may be practised to facilitate accountability, especially in 'administrative' strategic initiatives, rather than to support policy (in the public sector) or strategy-making (in the private sector).

Let us proceed with addressing the second question posed at the beginning of this section, namely the relevance of strategy formation thinking to sustainable development. Sustainable development issues are typical 'strategic' challenges — as defined in both military and corporate strategy theories — in that they require comprehensive and radical transformations of complex social systems affected by multiple actors over long time periods. This is why many sustainable development agendas, most notably the Rio Declaration (UNCED, 1992), contain various

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[11] Part of the explanation is that corporations are more concerned with economic objectives, whereas public authorities should also achieve environmental ones. However, even environmentally responsible companies rarely indicate that SEA shapes their strategies.

references to 'strategies' such as National Strategies for Sustainable Development (NSSD). It is thus not surprising that strategy formation theories are starting to penetrate the sustainability discourse. Research on corporate environmental and sustainability strategies developed with reference to organizational strategies formation theories has been around for quite a while (e.g. Porter and van der Linde, 1995; Orsato, 2004). In relation to the public sector, there has been a growing literature on NSSDs and similar approaches. Much of it uses the 'strategic planning' framework of the Planning School (e.g. Cherp et al., 2004), though informal and emergent elements of NSSDs are increasingly emphasized (OECD, 2001; Streurer and Martinuzzi, 2005). Cherp (2006) makes an attempt to relate the "5 Ps" to sustainable development challenges. He argues that a strategy for sustainable development is not only a vision (*Position*), but is also a *Pattern* of activities (such as sustainable consumption) and a *Perspective* (such as democracy, equality and human rights) as well as a *Plan* and even a *Ploy* to the extent that it involves politics, fosters alliances, re-negotiates interests and shifts power balances.

Thus the relevance of organizational strategy theories to public strategies, especially in the field of sustainable development, can be viewed as potentially plausible. In the next section we proceed from the assumption of such relevance and discuss its implications for the SEA discourse.

5. Discussion: implications for SEA

We can now revisit the two questions posed at the beginning of the article. The first question concerned the effectiveness of SEA in facilitating strategic change for sustainable development. The strategy formation theories contribute to answering this question in four ways.

Firstly, they suggest that SEA often fails to significantly influence PPPs because it is conceived as integrated with *formal* processes whereas in reality strategy formulation is often an *informal* process.

Secondly, they indicate that strategies may be *emergent,* rather than *deliberate* (as depicted in the mainstream SEA discourse). The assumed deliberate character of strategies allegedly enables SEA to affect a whole range of 'lower-level' activities by influencing 'higher-level' decisions. However, formal decisions by competent authorities are often 'enigmas' (Noteboom and Teisman, 2003) that at best articulate the *existing* rather than formulate *new* strategies. Thus, even in those cases where SEA manages to influence PPPs, its effectiveness in promoting environmental sustainability is likely to be insignificant.

Thirdly, knowledge provided by SEA is not always relevant to strategies. Most strategy formation schools follow Sun Tzu's maxims, where the knowledge of the "terrain" (stressed in SEA as knowledge of the natural environment) should be supplemented by the knowledge of "yourself" and "the enemy", i.e. various institutional actors. Moreover, such knowledge should be communicated in appropriate ways to relevant strategic actors, which is another challenge that SEA addresses only partially.

Finally, since the nature of strategy formation processes may differ between the types of organizations and stages in organizational evolution (the Configuration School), the effectiveness and utility of SEA may also significantly vary depending upon the context of its application.

The second question posed at the beginning of the article concerns potential approaches to improving SEA effectiveness. Strategy formation theories may point to the following general directions in this regard:

1. Adjust expectations. PPPs can only partially be influenced by environmental analysis and are themselves often not relevant to strategic change. Thus, the level of effort needed to incorporate SEA findings into PPPs may not be justified. Instead of concentrating on

effectiveness (such as looking for "early decision-making stages" which may simply not exist in reality), SEA may concentrate on efficiency, i.e. focus on what it does best hoping that effects will be in proportion to efforts.

2. Such increased efficiency may be achieved by finding an appropriate focus for SEA including application in situations where it will be most effective. SEA should be focused on those PPPs which are most likely to be influenced. This means looking for situations in which strategies are more deliberate and strategy formulation is more formal. Paradoxically, it leads us away from SEA of policies and towards SEA of well defined plans and programmes in hierarchically organized fields. At least some contemporary SEA research (Fischer, 2007) demonstrates that 'administrative' SEAs of well-defined plans and programmes are indeed more effective than 'political' SEAs. Moreover, in order to identify the right focus, the 'focusing' stages of SEA (i.e. screening and scoping) might contain elements of institutional analysis broadly addressing such questions as '*what is strategy in a particular situation?*' and '*can it be changed by SEA?*'

3. Focus SEA on producing strategically-relevant knowledge. SEA might add "*knowing yourself*" and "*knowing the enemy*" to its traditional "*knowing the terrain*" focus. As with point 2, some form of institutional analysis such as analyzing — from the sustainability perspective — organizational structures and rules, stakeholders, perspectives, culture, and politics may enhance SEA studies.

4. Producing relevant knowledge is not enough. It should also be communicated in an appropriate way, i.e. integrated with those knowledge flows that shape strategies. SEA should learn that strategies are often embedded in people's minds, individual and organizational narratives, networks and cultures. If the SEA's message is not incorporated in these media, it may well be lost. For example, IA practitioners should learn the art of storytelling. Telling the "springboard stories" can indeed induce a strategic change through learning and network formation (Brown et al., 2004; Denning, 2001).The knowledge-relevant messages which SEA can derive from strategy formation schools are summarized in Table 5.

5. To become relevant to emergent as well as to deliberate strategies SEA should shift at least part of its focus from strategy formulation to strategy formation, from decision-making to implementation. The simplest starting point here would be development of SEA follow-up elements. At the moment SEA follow-up thinking is in an initial stage of development but is already generating wide-reaching insights (Partidario and Arts, 2005; Cherp et al., in press). The challenge is to make follow-up truly strategic rather than simply keeping the PPP 'on track'.

Table 5
Key knowledge-relevant messages for SEA from strategy formation schools

School	Messages
Design	Capture internal and external factors
Planning	Systematically and rigorously analyze alternatives, costs and benefits, resources, consistency of implementation measures, etc.
Positioning	Ensure analytical validity of strategic objectives
Entrepreneurial	Communicate with the leaders...
Cognitive	...using right cognitive tools
Power	Analyze both internal and external stakeholders
Learning	Stimulate learning by connecting new knowledge to what people already know
Cultural	Ensure broad and adequate communication, integrate with collective narratives
Environmental	Foster adaptive response systems, including through follow-up
Configuration	Analyze the institutional context of strategy formation

As shown in this article, the contemporary SEA discourse contains many elements already touching upon or partially addressing these issues. This emerging thinking may be further developed in relation to several challenges framed by strategy theories. First of all, the very notion of '5 Ps' suggests that SEA should somehow relate to Positions, Perspectives, Patterns and Ploys, not only to Plans. Should this be attempted within individual SEAs, or in the SEA system as a whole, or only in connection with other policy instruments? If the latter, what should these instruments be and how does SEA relate to them? This may be closely connected to 'transition management' as practiced in the Netherlands with help, inter alia, of SEA (see Noteboom's article in this journal, as well as Noteboom and Teisman (2003) and Deelstra et al. (2003)). Such transitions are reminiscent of organizational transformations through learning described by Mintzberg et al. (1998) in terms of both the Learning and Configuration schools.

Here it is appropriate to note that beyond their individual contributions, strategy theories are also important for SEA as a system of thought, i.e. in their entirety. There is no 'right' theory of strategy formation. Each of the schools describes important types of strategic processes but also important aspects of any such process. The '5 Ps' are complementary rather than competing. Therefore the SEA theory should not strive to abandon "wrong" concepts of strategy formation (e.g. as rational processes) in favour of "true" ones (e.g. as learning processes), but to learn to deal with appropriate aspects of the strategic process depending upon the situation. This is already reflected in the diversity of views on SEA (which should clearly be nurtured) as well as in the common recognition that SEA is 'context-dependent' (e.g. Hilding-Rydevik, 2006). At the same time it is important that the diverse views of SEA neither compete for the 'right theory' nor abandon a dialogue with each other. A meta-framework for 'schools of SEA thought' similar to 'schools of strategy formation' may evolve with time to ensure meaningful and non-dominating interaction between SEA theories.

A first step in this direction may be recognition that different theories may be relevant for different types of strategic initiatives undergoing SEA. For example, seven distinct theories of public policy processes are discussed in Sabatier (ed.) (1998). Some of these have been or may be used in studies of policy-SEA. Similarly, planning theories are often referred to when analyzing SEA of plans. Perhaps the most appropriate role for strategy-making theories are in analyzing SEAs of development (e.g. poverty reduction) as well as private sector strategies. At the same time, meaningful bridges can be made between policy, planning and strategy theories to formulate more universal SEA advice.

This is clearly an ambitious or, one could say, strategic agenda. So what could be a strategy for SEA? We already know that strategy is 'action' as well as 'intention' and that it can be 'emergent' as well as 'deliberate'. Therefore, conceptual foundations for SEA should not be developed in separation from SEA practice. This raises a question about the extent to which SEA theories should mix 'prescriptive' and 'descriptive' elements. Prescriptive approaches tend to be generic and hence simplified, ignoring the importance of context which is at the heart of most strategy theories. While they are easily translated into policy advice, they may also result in great disappointment of practitioners and hence discourage the application of SEA. On the other hand, descriptive theories are much more difficult to express in 'guidelines', 'blueprints' or 'model acts'.

One approach is to foster 'adaptive SEA systems' which are enlightened, but not constrained by descriptive theories (Cherp and Antypas, 2003). In such systems, SEA research would equip practitioners with tools to understand strategy formation processes and to select the SEA approaches most effective in specific strategy situations. In turn, practical experience from undertaking SEAs in different contexts would be fed back to inform SEA theory and guidance. In such a system where 'the theory' and the 'practice' are not separated (much as decision and

implementation are not separated in an emergent strategy), it might be easier to achieve synergy between individual SEA cases and hence strategic change towards sustainable development extending beyond individual PPPs.

Table 6
Key characteristics of strategy formation schools

	Key sources	Prescriptive or descriptive	Strategy formulation	Deliberate or emergent	Central strategic actors	Role of knowledge
Design	Selznick (1957)	Prescriptive	Judgmental	Deliberate	Chief executive	Based on SWOT, or similar ad hoc analysis of external and internal factors
Planning	Ansoff (1965)		Formal, decomposed		Planners	Factors to be forecast or controlled, costs and benefits, impacts, comparison of alternatives
Positioning	Porter, 1980, 1996)		Formal, analytical, systematic		Analysts	Economic analysis (external) for deriving objectives, system analysis (internal)
Entrepreneurial	Schumpeter (1950)	Descriptive	Informal, visionary		Leader	Largely intuitive, particularly of niches in external Environment
Cognitive	Simon (1957)		Informal, mental	Emergent	Mind	Cognitive and psychological
Learning	(Lindblom, 1959; Senge, 1990) *		Informal, messy		Anyone who can learn	Lessons learned, evolution of knowledge
Power	micro — Allison (1971), macro — Astley (1984)		Conflictive, messy	Emergent (micro), deliberate (macro)	Anyone with power (micro), whole organization (macro)	Power structures, strategic interests and capabilities (external and internal)
Cultural	(Normann, 1977; Bates et al., 1995)		Collective	Deliberate	Collectivity	Ideologies, collective discourse, narratives
Environmental	Hannan and Freeman (1977)		Passive	Imposed, hence emergent	Environment	Rational analysis of external Environment
Configuration	Miles and Snow (1978)	Descriptive for configurations, deliberate for transformations	Context-dependent	Deliberate for transformations	Context-dependent	Special focus on the stage in organization's 'eco-cycle' and transformations

Source: Mintzberg et al. (1998), pp 354–359; * — references added by the authors.

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