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From Cognition to Strategic Thinking

M S S El Namaki*

Retired Dean, MSM, Netherlands

***Corresponding Author:**
M S S El Namaki, Retired Dean, MSM, Netherlands.

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The Problem

Cognition is Omni present. It constitutes a capacity for logic, understanding, self-awareness, learning, emotional knowledge, reasoning, planning, creativity, critical thinking, and problem-solving. Cognitive functions hold the key to many premises of strategic thinking from memory, and problem solving to creativity, visioning and control. How does this relationship look like? A what could be the outcome?

This will be the core of the following article. The article starts with a definition of the concepts of cognition and strategic thinking. This is followed by an analysis of relationship between cognitive functions and modes of strategic behaviour. Cognitive functions are viewed as a whole or as individual functions. Strategic thinking is viewed in terms of contemporary premises and forces. The outcome is projected as states of strategic behaviour.

The article relies on current work on cognition as well as new strategic thinking.

What is Cognition?

There exists a variety of definitions for cognition, but they all boil down to being "the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses" () Put differently it is the mental processes involved in gaining knowledge and comprehension. Cognitive processes include thinking, knowing, remembering, judging, and problem-solving. They involve higher-level functions of the brain as language, imagination, perception, and planning.

Basic cognitive processes of perception, attention, and memory could lead to creativity. Creative cognition involves perceptive original interpretation of experiences or associations with support from memory and stored information. Creative cognition may also be metacognitive and tactical i.e. it allows the individual to exert a degree of control over his own thinking and direct individual cognition to the generation of original and useful ideas, insights, and solutions.

The Prime Cognitive Functions of the Brain

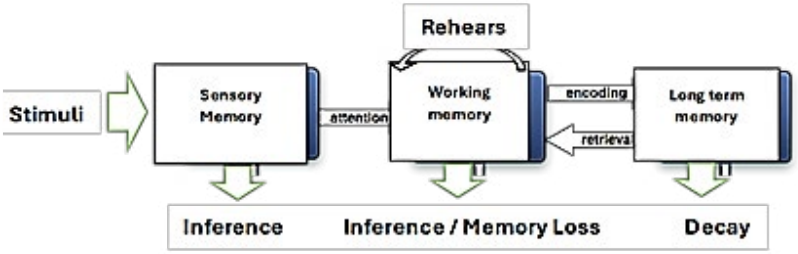
Cognitive functions of the brain spread over a wide span with memory and perception at the forefront.

Memory

Memory is the process by which knowledge is encoded, stored, and retrieved. It could be short term or working memory or long term. Short-term memory and working memory terms are often used interchangeably. There are scholars who claim that some kind of manipulation of remembered information is needed to qualify the task as one of working memory [1]. Senses are involved too. Visual memory involves the ability to store and retrieve previously experienced visual sensations and perceptions when the stimuli that originally evoked them, are no longer present. Auditory memory, on the other hand, involves the skills of attending, listening, processing, storing, and recalling. Sequential memory requires items to be recalled in a specific order. Visual sequential memory is the ability to remember things seen in sequence, while auditory sequential memory is the ability to remember things heard in sequence.

Sensory memory is the shortest-term element of memory. It is the ability to retain impressions of sensory information after the original stimuli have ended. It acts as a kind of buffer for stimuli received through the five senses of sight, hearing, smell, taste, and touch, which are retained accurately [2].

Figure: Memory segments



Source: Adapted from [1].

Perception

Sensation is the absorption of information by a sensory receptor Perception is the interpretation of what is sensed. Visual perception refers to the brain's ability to make sense of what the eyes see, while auditory perception is the ability to identify, interpret, and attach meaning to sound. Lack of experience may cause a person to misinterpret what he has seen or heard. In other words, perception represents our apprehension of a present situation in terms of our past experiences. "We see things not as they are but as we are" .

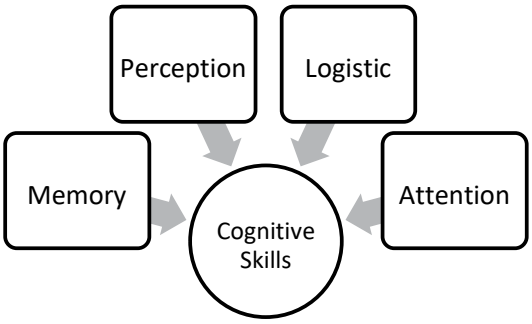
Attention

Attention is the ability to actively process specific information in the environment to the exclusion of others. It is an ability to choose and concentrate on relevant stimuli. Attention is a basic component of human biology. Orienting reflexes help determine which events in environment need to be addressed, a vital process. There are, however, different segments of attention. One of those makes a distinction between arousal, focused, sustained, selective, alternating, and divided attention [3]. Another classifies attention as sustained, alternating, selective, focused and Limited Attention [4]. Perception and attention are related to each other by the outcome that an individual experiencing the stimuli assigns his/her awareness to the object he/she identifies [5].

Logical Reasoning

Logical reasoning is the process of using a rational, systematic series of steps based on sound mathematical procedures and given statements to arrive at a conclusion. In logic, there are two broad methods of reaching a conclusion, deductive reasoning, and inductive reasoning. Deduction begins with a major premise followed by a minor premise. In inductive reasoning broad conclusions are drawn from specific observations.

Figure: Key elements of cognitive skills



Source: [2].

What is New Strategic Thinking?

The concept of strategic thinking has undergone considerable change thanks to artificial intelligence and related technologies. Many of the long-cherished foundations have lost validity and the concept today rests on radically different premises. Prime among those are the following. (El namaki,).

The Shift from Product to Function

Advent of AI frameworks is leading to a shift from strategic product and market focus to function focus. Functions will determine the instrument, being a product or a service, congruent with business environment conditions. Function analysis derived from big data will contrast with „need analysis drawn from market parameters. Rather than relying on customers to tell a business what they want from a product, data analysis will point to the ultimate function fulfilling medium [6].

Long and Short-Terms are Becoming Event Terms

Time is a measure of events. And their sequence. Duration of events and the intervals between them marks the lapse of time. The shorter the duration and the faster the flow of events the greater the conscious "feel" of time. AI will, more likely than not, lead to a greater number of threshold events and a faster flow of those events. Event flow and sequence will constitute a yardstick to measure business strategies and their ultimate outcome. Long and short terms, in conventional analysis, will give way to event fulfillment and temporal positioning [7].

There are New Drivers of Industry Structure

Long cherished industry structure drivers as power of buyers, power of suppliers, entrance and substitution will give way to factors as, industry function fit, industry life cycle slope and industry overlap [8]. .AI industry penetration will be wide and deep. The result will be deep and far-reaching restructuring

of industries as banking, urban management, health sciences, communication, energy, and retailing. From competitive advantage to competitive intelligence. Concepts of competition will assume different parameters from those recognized in contemporary economics and management frameworks. Future competition among firms will depend more on innovative intelligence rather than competitive advantage. Businesses extracting "intelligence" from data will have a competitive edge within an environment driven by forces artificial intelligence. Quality of intelligence can make the difference between competing firms.

Competitive Advantage is Replaced by Competitive Intelligence

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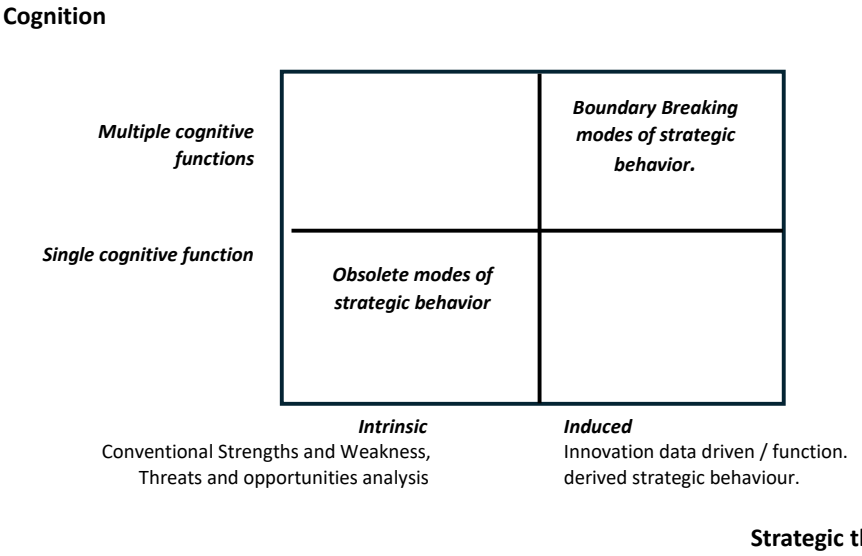
Cognition and Strategic Thinking: The Cause and Effect

Rapid technology shifts will render conventional strategy formulation obsolete. These novel technologies will induce a change in knowledge and a consequent change in cognitive competencies. Enhanced cognitive competencies will induce novel creative triggers of strategic thinking away from classic environmental threats and opportunities and organizational strengths and weaknesses. Processes like thinking, reasoning, problem-solving, and decision-making will assume new dimensions and alter the process of interpreting sensory information, communicating, and performing mental tasks as strategic thinking.

Figure: Cognition strategic thinking interaction



Cognition Intrinsic Induced

Conventional Strengths and Weakness, Innovation data driven / function. Threats and opportunities analysis derived strategic behaviour.

Strategic Thinking

A combination of multi functional cognition and innovative data driven and function derived strategic thinking could lead to boundary breaking modes of strategic thinking and behaviour. The other extreme is that where intrinsic strategic thinking is related to a single cognitive function i.e. memory. The output here are obsolete modes of strategic behaviour.

Boundary Breaking Strategic Behaviour

Function Tracking

A function is the purpose of an object. Functions are powerful mechanisms for exploring the relationship between people and the instruments of their environments i.e. products. These instruments are function fulfilling products whose fulfillment has "missions," a technology mission, a sociology mission, an aesthetic mission, and an economic mission, among others. The technology and engineering missions deal with the performance of a technology-rooted process and the consequent design and manufacturing implications. The social mission is to make products transmit messages about themselves, their owners, and their makers. The aesthetic mission is to express the products sensory values or sentiment and taste. Finally, the economic mission expresses the exchange value of this product [9].

Product function analysis develops a function structure or an abstract model of the product, or product concept, without the material features of shape, dimension, or material. It provides a link with the environment where the product is born, used, and abandoned. It also explores the host system, the environmental elements of use; the established and formalized functions; how to control the validity of the functions and a function characterization and hierarchy [10].

Data Trigger

Strategic behaviour will, to a great measure, focus on insights revealed by data and the direction those insights point to. Visions and strategies should relate to what data analytics reveal as a

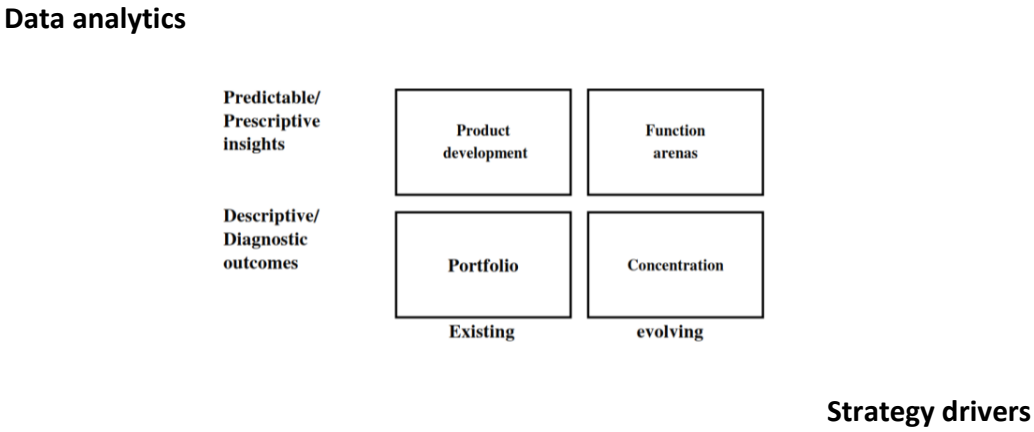
prospect and longer-term outlook.

The relationship is reflected in the following figure. The Y axis represents data segments while the X axis represents strategy drivers.

Strategy drivers are those forces inducing strategic behaviour. Those are either existing or evolving. Existing drivers are present day inducers of strategic behaviour including the search for competitive advantage. Evolving drivers are those inducers resulting from insights as much as the disruptive forces of, among others, technology.

Data is segmented into two states the diagnostic and the descriptive progressing towards the analytical and the perspective [11].

Figure: Data induced strategic thinking patterns



Source: [11].

Event Time Parameter

Creative strategic behaviour connotes relating strategic events to an event time. This event time refers to the actual temporal interval during which an event takes place. It is a notion of task fulfillment projection relative to other tasks within a multitask fulfillment scope. It, in other words, implies making a choice between clock and event-time as a fulfillment regulation strategy to achieve a strategic goal. The contrast is between task fulfillment time and "clock time". It is also between the notion of time as a term i.e. the short and long terms versus the goal fulfillment time span. Or between
time measurement and time output.

The concept of time event could arise from innovative and creative drivers as the function orientation of strategic behaviour. (Tamar Avnet, Anne-Laure Sellier, Clock time vs. event time: Temporal culture or self-regulation? Journal of Experimental Social Psychology, Volume 47, Issue 3,2011, Pages 665-667,)

Dynamic Industry Boundaries

Substitution measures the boundaries between industry. Function substitution identifies the point where an industry ends, and another industry takes over. Those industry boundaries could be sharp and explicit or vague, and they could be firm or dynamic. A sharp line of demarcation between two industries could be found in the arms industry while a dynamic and often blurred boundary could be found in the electronics industry. It is the authors contention that dynamic industry boundaries induce equally dynamic modes of strategic behaviour. Strategic behaviour becomes, then, a function of industry dynamics including technology.

Obsolete Modes of Strategic Behaviour

Obsolete modes of strategic behaviour could be at corporate, business unit and functional levels. The force fields were once identified by Porter as threat of new entrants, bargaining power of buyers, bargaining power of suppliers, threat of substitutes and competitive rivalry. The modes were concentration, competencies, focus and ends with end game. The vehicles are acquisition, merger, and divestment.

Seeking concentration connotes pursuing merger and acquisition thus limiting the number of competitors to a specific, high-concentration norm and create, in the process, forbidding barriers. Seeking competencies. Implies acquiring a competency to enhance or even create a core competency. Seeking focus implies rationalization of its competency profile of the firm by divesting non-core competencies. And seeking an end game follows from a state of instability that could lead to atrophy or end game. In this situation, the capital markets are despondent, and the competency profile is moribund.

These force fields and modes of strategic behaviour are obsolete given the fast pace of technology change referred to earlier. They rely on a single cognitive function: memory. Experience guides the search for a strategic posture.

Summary and Conclusions

Cognition is Omni present. It constitutes a capacity for logic, understanding, self-awareness, learning, emotional knowledge, reasoning, planning, creativity, critical thinking, and problem-solving. Cognitive functions hold the key to many premises of strategic thinking from memory, and problem solving to creativity, visioning and control. How does this relationship look like? A what could be the outcome?

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relationship between cognitive functions and modes of strategic behaviour. Cognitive functions are viewed as a whole or as individual functions. Strategic thinking is viewed in terms of contemporary premises and forces. Relationship is segmented into two categories: boundary breaking strategic thinking and conventional strategic thinking. Boundary breaking strategic thinking reflects the possible link between multiple cognitive functions and advanced modes of strategic thinking or modes driven by data access and function prevalence. Conventional modes relate single cognitive function i.e. memory to conventional strategic thinking domains i.e. environmental threats and opportunities as well as organization strengths and weaknesses [12-15]..

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