Sifting Through Data Overload to Broaden Your Company's Vision

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After spending the last few years on cost-cutting and improving short-term results, many companies are now "looking above the foxhole at the enormous change in markets and technologies" that are currently taking place, Wharton marketing professor George Day told participants during the opening session of a May 2 Wharton conference entitled " 'Peripheral Vision: Sensing and Acting on Weak Signals." What they see is "tremendous inflow of data, but weak signals." Many strategists, he said, are asking themselves how they can make sense of all that data in a systematic fashion – not just today but over the long term.

A good place to start, according to Day, might be to ask this question: "Where is the periphery?" Unfortunately, it's not an easy question to answer. As Day noted, "one person's periphery is another person's core."

Day referred to a quotation from management consultants Richard Foster and Sarah Kaplan. In their book, *Creative Destruction*, Foster and Kaplan define the periphery as "the edge of the vortex of creative destruction. In this vortex, attacking companies occupy the periphery while the defenders occupy the core of the vortex, focusing on the evolutionary improvement of the existing business."

Learning how to use peripheral vision effectively is tricky, Day said. "We want to capture the issues at each of the points" in the process: scoping, scanning, interpreting, acting, learning and adjusting. Yet at each stage, the process is affected by mental models and frames that we take with us. Often these models and frames are so heavily engrained that we don't realize they exist.

Defining scope is critical to plotting out corporate strategy for effectively scanning the periphery. "How broadly do you define the scope?" Day asked, and in what space do you look for it? To illustrate the importance of this issue, Day cited the case histories of three companies that successfully broadened their scope and vision – and learned from that experience. Each company went on to redefine its "core" and "periphery," and become a leader in a sector that had once been peripheral to it.

· Abbott Laboratories: It traditionally defined its core as ethical pharmaceuticals but expanded its vision to consider a broad range of products that lower the cost of healthcare. As a result, Abbott now produces hospital nutritionals, diagnostics and supplies.

· FedEx: It traditionally defined its core business as the overnight delivery of small packages, but it expanded its vision by studying the impact of electronic commerce on global sourcing. As a result, FedEx now acts as the leading end-to-end logistics supplier.

· Pitney Bowes: It traditionally defined its core as postage meters and mail handling, but it expanded its vision to take in a wide range of related back-office market trends. Pitney Bowes now makes systems that require sophisticated back office equipment.

These companies expanded their vision to include broader trends that opened up new markets for them, noted Wharton marketing professor Paul Schoemaker. But their success involved more than simply broadening the scope of their scanning. As Day noted, "These companies used the feedback [from scanning] to continually change the scope of their inquiry" and redefine their vision so that it was broad

enough to open up new markets.

Managing this kind of process can be a lot harder than it sounds. Day went on to define a number of pitfalls that companies should beware of when they expand their scope in an effort to redefine the "periphery." These potential pitfalls include:

· Myopia (short-range vision)

· Flawed materials (using the wrong tools)

· Uncoordinated distribution of intelligence, and

· "Attention deficit disorder"— an inability to stay focused for long even on signals that are apparently significant.

In larger companies, where several different individuals and/or groups are scanning for data, the uncoordinated distribution of intelligence can be an especially significant challenge. "There are thousands of events and trends that are at the periphery," Day said. "In most organizations, someone knows these trends, but it is hard to pull them into a cohesive picture."

Other key concerns for strategists who are trying to expand their focus effectively may include:

· Diminishing returns: If you put lots of resources on the periphery, are you overwhelmed by new data?

· Finding the right balance between central vision and peripheral vision: If you focus too much on peripheral events, you might miss some key events at your traditional core.

· Deciding where and who should do your scanning: How much scanning (if any) should be done in-house? What role should be played by outsiders who have specialized expertise about the periphery – but may not fully understand what data is key for you?

To dramatize these hidden risks, Day and Schoemaker cited some case studies of companies that expanded their vision and scope yet were nevertheless blinded by events:

· Royal Dutch Shell suffered a fiasco in the North Sea when it tried to sink the Brent-Spar platform. Shell forgot to scan for information about the values and beliefs of its environmentalist opponents.

· Monsanto failed to control the impact of opposition to its genetically modified food products, beginning in 1999. Monsanto missed weak signals about growing sensitivity to food issues in Europe, as well as related concerns emerging from headlines about Mad Cow disease, Chernobyl and other seemingly unrelated events.

· Thirty-nine pharmaceutical companies sued the South African government (including Nelson Mandela) over use of HIV drugs in 1998. The companies missed signals about emerging social and cultural values that had an impact on their products.

In a further effort to define this subject, Day and Schoemaker presented lists of major cognitive challenges and organizational challenges to achieving success. Their list of cognitive challenges included:

· "Short-range focus" – Strategists focus most on immediate tasks, thus reducing their peripheral vision.

· "Framing" – Strategists ignore, distort or dismiss signals that don't fit their mental frames. "We all

have to simplify the world. We filter out what doesn't fit," said Schoemaker.

· "Overconfidence" – Strategists are so sure of themselves, "they don't know what they don't know," said Schoemaker.

· Strategists have a penchant for confirming, as opposed to disconfirming, evidence. Schoemaker quoted the old expression, "If you torture the data long enough, it will confess."

Next was their list of organizational challenges:

A limited awareness of the impact of cultures – and corporate cultures.

- Prevailing dislike for ambiguity: "We don't like to admit the world is messy," noted Schoemaker.
- Groupthink: There is a certain comfort in belonging to the majority. "Only a rare individual will be truly independent," he added. Many people are afraid that if they stand out, they will be ostracized. "How do you allow conflict of ideas without conflict among people? We need a culture that lets you disagree without being disagreeable," Schoemaker suggested.
- Poor signal/noise ratios: There may be many false positives and negatives.
- Diluted accountability: There is no one individual or group clearly responsible for focusing on weak signals and responding to them.

Despite such challenges, Day and Schoemaker identified examples of strategic "vigilant peripheral vision" that have led to significant results:

· Procter & Gamble detected and responded successfully to rumors that unfairly linked its Fabreze product to the untimely death of domestic canaries. That's because P&G used a cyberagent to pick up online rumors about the company at an early stage, and took countermoves to defuse them.

· Leading companies studied mainstream users on the periphery to identify needs that they would value: Liquid White-out, British Airway's luggage handling, Gatorade, the Sports Bra.

· The physicist Michael Faraday "accidentally" noticed the induction current in a voltmeter because his mind was prepared to recognize it.

· Louis Arnitz, a travel agent in Frankfurt, Germany, detected weak signals about the slowly emerging Internet for years, and then developed web-based software for corporate travel when the market was ready. His company, i:FAO, became a leader in this sector.

· Enron Federal Credit Union picked up warning signals of Enron's coming crisis and diversified its business in time to survive Enron's bankruptcy. It renamed itself StarTrust Federal Credit Union.

How can strategists learn to interpret signals on the periphery effectively? Day and Schoemaker clarified a checklist of questions that strategists would do well to ask themselves about their efforts:

· How do our mental models filter or distort the signals we take in?

· How should we interpret the patterns in the flow of weak signals?

· What role should we assign to outsiders? To war gaming? To other scenarios?

· How can we integrate findings we derive from the periphery with other valuable sources of data, such as our analysis of competitors? With insights from our customers? With our studies of technological possibilities?

When it comes to acting on those signals, the Wharton professors suggested that strategists ask themselves:

· What resources are we devoting to the periphery? With what results? And what resources should we be devoting to the periphery instead?

· Who is accountable in our organization for taking action? Who should be accountable?

· When might it be better to watch and wait, rather than take action on signals from the periphery? When might it be better to position ourselves to learn from outside experts and partners?

Natural Science and Strategic Surprise

Taking a different approach to the same issues, management professor Sidney G. Winter used metaphors from the world of natural science to demonstrate the range of challenges involved in sensing strategic surprises and reacting to them effectively. His presentation was entitled "Sensors, Selection and Strategic Surprise."

Winter began by noting that organisms such as moths, bees and flowers have evolved sensors that respond to what Winter defined as "strategic threats" and "strategic opportunities." As an example of a response to "strategic threat," some moth species can hear the sonar of the bats that prey on them – and use sonar to trigger an evasive dive that reduces the chances of being eaten. Yet these same moths can't hear anything else; they have no "peripheral audition." As Winter said, "evidently the survival gain from the flight maneuver 'pays for' the fitness cost of the sonar hearing system."

As an illustration of response to "strategic opportunity," Winter explained how some bees can sense the ultraviolet "plain" light of white flowers. The bees are attracted to white flowers – apparently even dazzled by them – because bees don't sense light frequencies the same way humans do. "The world of experience depends on the sensors, and differs from organism to organism," he said.

Probing the broader lesson, Winter noted that "evolution is a notably effective designer of sensors but it is also notably backward-looking." That is to say, "evolution has left us with consequences of the past." Happily, organisms have sensors to inform them about threats and opportunity. But "sensors are costly," Winter added, and "a big part of the cost is typically fixed and independent of use."

Sensors contribute to the organism's success only by triggering and guiding the use of "effectors." There is pressure to eliminate any sensor that isn't linked to a suitable "effector." Those sensors that survive long-term in an organism result from what Winter called "selection, adaptation and learning" (SAL, for short). If a sensor doesn't pay for itself, it is eliminated. Often, he added, "only a 'narrow band' part of the sensor survives" – for example, the bat's sonar.

What does all this suggest for corporate sensing strategy? Winter's analysis made a key distinction between two kinds of sensors: "general purpose sensors," which can detect a wide range of stimuli, including those on the periphery – and "special purpose sensors," which can only pick up a limited range of stimuli and can be hard to redeploy for other goals. Winter also distinguished between "external sensors" that pick up stimuli outside the organism's background and make them available to sensors, and "internal sensors," which capture information about its internal state.

When some sensors are very cheap but linkages and effectors are expensive, an organism may tend to acquire a lot of information that it does not know what to do with, Winter noted. By analogy, we live in an age when it is cheap to own and operate sensors that pick up vast amounts of business data. However, it can be more expensive to find ways to effectively link that data to "effectors" – strategists and planners who put the information to good use. In other words, it is much cheaper and easier to collect data than it is to figure out ways to make sense of it.

Another obstacle to effective scanning is that businesses typically make substantial investments in sensors that "are specialized, routinized and distributed in the organization," Winter noted. When data is routinely segmented for distribution into various business units, a recurrent issue is that "information comes in at diverse points and does not trigger action because it was not combined from various entry points." Specialists may be highly paid to analyze a narrow range of data, not to sense and analyze diverse kinds of data.

Winter went on to discuss the relevance of "Law X." This corollary of Murphy's Law holds that, as Winter put it, "Whatever X is, (a) a ton of information about X is available but (b) the right information about X is not available." That's because, Winter explained, "the 'ton' [of information] is produced by cheap [general-purpose] sensors, and the expensive sensors for the right information have not been deployed." Or, to put things another way, "general purpose vision tends to be weak" and unfocused.

Given the mindset and culture of most organizations, it can be a major challenge to provide sustained alertness for the sorts of signals that come rarely. For example, Winter cited the Shuttle Columbia (a disaster that was so unlikely it came as a big surprise); recurrent alerts about terrorism; and "normal accidents" that no one can anticipate. Noted Winter, "Everyone has to decide how much time to devote to the periphery and how much [time to devote] to their own job."

As a result, it is vital for the CEO and his/her senior group of advisors to set a suitable tone for the entire organization. Winter advised CEOs and other senior strategists to think hard about such questions when plotting an approach to these issues:

- Do we need specialized but routinized sensing in areas where we don't have any?
- Are there ways we can strengthen the "general purpose" sensors that we deploy?
- Are there ways we can strengthen our peripheral vision, in the sense of "exploiting off-purpose signals from specialized sensors?"

Summing up, Winter concluded, "First, try not to be the moth in the living room." Next, he noted that "what doesn't pay its way will be suppressed. And even some things that do pay their way will be suppressed because the rewards take such a long time to be realized."However, "it is the periphery that provides the alerts to redeploy general-purpose sensors to redirect attention to what now matters."