Gutenberg's Periscope: or why we need to know what we *don't* know

Most knowledge management theorists will rally around the motto: "If only we knew what we knew". In fact, quite often, it's not the knowledge that's resident within a company that's important. It's the knowledge that the company doesn't have, and doesn't even know exists.

In the late 1430s, a German goldsmith, inventor and businessman wannabe named Johann Gutenberg, secured venture capital funding for a get-rich-quick enterprise. Every twenty years, there was a major religious festival and fair at Aix-la-Chapelle. Pilgrims flocked from all over Europe for this event. Gutenberg's invention was a periscope, which would enable the pilgrims to see over the tops of the crowd and view the religious processions and accompanying festivities. It was a great idea, and it was a great invention, but Gutenberg got the year wrong. His periscopes were ready a year early, found no ready market, and his investors took him to court and bankrupted him. Gutenberg got his context wrong.

Gutenberg surfaces again ten years later in Mainz, now in partnership with a businessman called Johann Fust. This time the partnership is working on four convergent technologies. First, Gutenberg is using his goldsmith skills to create moulds for creating typefaces; he is using winepress technology to arrange the type forms in a frame, and screw them down to create an impression in paper; he is developing a new type of fatty based ink, which will stick to metal and create a clear and durable impression on paper. One of his co-investors owns a paper mill, a technology only recently imported into Europe. He is the inventor of the modern printing press.

This time, his context was right - not, initially because there was a large market for books, because there was not. The Christian Europe of that time was terrified of hell. Gutenberg's invention found immediate and lucrative markets in the printing of indulgences, pieces of paper issued by priests giving them time off their suffering in the underworld, in exchange for donations to the church. Gutenberg never made any money out of books.

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Leaping forward 400 years, the fax machine is another good case in point. A fully-functional fax machine was invented around 1851, and Napoleon III was sending regular faxes between Paris and Lyons in the late 1860s. But the context was not right for commercial success, the fax machine was relegated to a minor role in the US Map Service, and it took 130 years and widespread commercial telephony before the invention found its place in history.

Market readiness, and convergent technologies: there are many resonances with the success of IT based enterprises in the 1980s and 1990s, but these resonances also extend to "traditional" product-based businesses. In a just-published book, CK Prahalad notes interesting developments in the personal care product industry as a result of the convergence of markets and technologies.

"Revlon, L'Oreal, Unilever, Shishiedo and Procter & Gamble are moving up the value chain in their businesses. With an ageing population, skin creams are increasingly incorporating an anti-ageing ingredient (such as Retinol) and shampoos may incorporate a hair growth hormone (such as Rogaine). Personal care products are becoming more sophisticated and are beginning to utilise the knowledge bases that have long been familiar to the pharmaceutical industry." *(Management 21C: New Visions for the New Millennium*, October 1999).

Again, convergent technologies play a key role, as well as the readiness of the environment to buy. Without those factors, and without instincts for and awareness of those factors, the application of knowledge has no lasting value whatever. More interestingly, the successful enterprise often has to recognise and acquire knowledge that *it does not currently have*, precisely *because* of the context it finds itself in.

The so-called knowledge-rich enterprises, the computer pioneers of the 1980s, lacked all of the supposed criteria for economic success: no capital, no money, no assets - only their brains and a good idea. Actually, they didn't know much then either. If they had known how little they knew, perhaps they wouldn't have persevered.

There is an element of cognitive dissonance involved in the venture capital investments currently all the vogue in hi-tech startups. These are the high roll gamblers of the old west, transformed into suits and cigars financing the workshops of Silicon Valley. The market itself has become risk pursuant - the stock value of hi-tech "knowledge-rich" companies far exceeds their asset value and even their balance-sheet performances.

The phenomenon is not new. In 1878, the astonishing and impertinent Thomas Alva Edison procured $50,000 in venture capital investment for his Electric Lighting Company from the leading financiers of his day, W.H.Vanderbilt, J. Pierpoint Morgan and Western Union. The electric lightbulb was still just an idea in his mind, he had no idea how to make it work, there was no working prototype, and the leading physicists of the day said that his idea was impossible.

What lies behind this audacity? Not knowledge as we traditionally perceive it, although *attitudes* to knowledge figure in the equation. There is a key difference from gambling in the minds of these financiers, the robber barons of old, and the robber barons of Silicon Valley: in gambling, the odds are stacked in favour of the house. In venture capital risk, the odds are not especially stacked against you, and the financiers who have already made their millions see a percentage in the wild card - especially if the wild card suggests revolutionary (and profitable) changes.

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We, the respectable people, tend to ignore this. We believe in rationality: we believe it all has to be worked out in advance, and the numbers have got to work. The risk takers and the visionaries work completely differently. The point is this: it is not what they know, that makes them successful, it is their *desire to know*. This is the fuel that tells them what they need to know, and enables them to create new knowledge.

Creating the knowledge inventory or knowledge reservoir is therefore not enough: to be truly knowledge based, we need to incorporate knowledge-creation skills into our organisations: and that means building space for entrepreneurs, visionaries, mavericks, risk-takers and explorers within jobs, teams and projects. It also means building in buffers to protect this space from the more institutionally and rationally minded of us, and the skills effectively to mediate the conflicts and frictions that inevitably occur.

This is a much, much harder task than building groupware, a data warehouse or a just-in-time knowledge delivery system. And it is a task that we persuade ourselves that we have completed when we send our staff on creativity or communication skills courses. We haven’t. We haven’t even begun to scratch the surface, and the organisations that have the greatest chance of succeeding in this are always the startups, and always the entrepreneurs. Andy Grove recognised this when he spoke of the "Cassandras" in an organisation who call out warnings about the "strategic dissonance" between what the organisation knows, and what is happening in the environment around that organisation. Sometimes, he says, you have to abandon your knowledge if the signals you are getting tell you that it no longer works. (*Only the Paranoid Survive* 1996).

Although we try to persuade ourselves that the business world is in daylight, in reality we are driving in the dark, seeing no further than our headlights. To navigate we read the signs and follow the markings as they appear briefly before us. To navigate well, we also need imagination, maps, and a radio tuned to the right station. We may not be able to see what lies beyond the edge of our lights, but it is important that we are *curious* about it.

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