

Excerpt from *DECIDE*

We all have an image from cartoons of the light bulb going on inside our heads. Remember, it is a cartoon! Much more often than not, clarity does not come by chance. Clarity comes from hard-smart work. What is hard-smart work? It's the work that your competitors won't or can't do and that gives you the competitive edge. The work that only you and your team are able to do because you have thought about it smarter, and worked on understanding it harder than anyone else.

The story of the Linotype machine is a perfect example. In the late 19th century, despite being introduced around 200 years earlier, newspapers were only a few pages long. This was mainly because of the cost of printing as the plates for print runs were set by hand, letter by letter. There were fast printing presses which produced thousands and thousands of copies quickly, but to capture the daily news and get it to the masses, the laborious step of compositing the text limited production to a small number of pages.

The race had been on for decades to find ways of automating the process in order to cut costs and increase production. American novelist Mark Twain was one who could see the upside in creating a solution and he invested a huge amount of his wealth into the Paige Compositor. This investment is one commonly attributed with causing his bankruptcy. Why did the Paige Compositor fail? Because it was not nearly as good as the Linotype Machine invented by Ottmar Mergenthaler.

The Linotype machine was the brainchild of the combination of a court reporter James Ogilvie Clephane, "mechanic" Charles T. Moore and trained watchmaker Mergenthaler. What a combination. Clephane, while driven to report faster, was also a venture capitalist so money was available. Together, with Moore's smarts for mechanics and Mergenthaler's smarts in watchmaking, they invented one of the most amazing machines ever built. In action, it's like a very large watch moving smoothly and rapidly. I was a bit surprised to learn that the Linotype machine only replaced a half a dozen people doing the compositing. I would have thought it would have been 20 or 30. Goes to show how fast the typesetters of the 1800s actually were. The Linotype machine of the 19th century combined a keyboard with a magazine of letters that were slotted into a line of type. Each letter was injection moulded with molten metal, eventually forming a line of type on the print plate. In his episode on the Paige Compositor for his "Engines of Ingenuity" radio program at the University of Houston, John Leinhard spoke of the difference in the approaches of the inventor of the Paige Compositor and that of the creators of the Linotype. According to Leinhard, Paige built his device based on a study of human-hand movement, while Mergenthaler based his on what he knew a machine could do. The Paige Compositor had 18,000 parts with much more chance of breakdowns and was more expensive than the Linotype Machine.

As you consider your next investment, consider what Twain said about his experience with the Paige Compositor. The lesson: "Not to invest when you can't afford to and not to invest when you can". The winners, Clephane, Moore and Mergenthaler worked together over almost two decades to produce the Linotype machine. These determined hard-smart workers went from idea, to patent to prototype, again and again until they found the gold. While there is always an element of luck when it comes to beating scores of other inventors working over decades, one can't help but reflect on their determination and their intelligence. Their invention was still producing the New York Times in 1978, almost a century later. It led to an explosion in literacy as reading material became more

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available. It was the catalyst that enabled journalism to flourish as more stories could be written and read than at any time in history.

In the work I have done with executive teams, the ones that have been most impressive and visibly more organised and more successful are the ones that do the hard-smart work. The ones that do the analysis.

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