

Twenty Heartbeats—Engineering Is Art And Business

by Kevin Parmenter, Semiconductor Industry Veteran, Phoenix, Ariz.

An article I found online^[1] led me to a wonderful book titled, "Twenty Heartbeats."^[2] I recommend you read it, read it to your children and become inspired by this tale with its parallel to modern technology and management of our organizations.

The story is based on a very old Chinese legend about a wealthy man who dreamed of having a painting made of his favorite horse. The wealthy man commissioned an artist renowned as a great painter of horses. His paintings were so realistic that horses whinnied when they saw them.

After engaging the artist to paint his horse, the wealthy man eagerly awaited the finished artwork. But to the wealthy man's displeasure, the wait for his painting stretched on and on. After many years, the artist summoned the wealthy man with the news his painting was ready. Then, in his presence, the artist dashed off a painting of the horse in a mere "twenty heartbeats."

Initially, the wealthy man was so angry about his long wait and the seemingly careless way the painting was produced that he failed to see its perfection. But in the end, the man discovered why the artist kept him waiting and recognized the painting's true worth. Though it had appeared that the artist painted the final picture with little effort, he had previously produced hundreds of paintings of the horse in preparation for his final masterpiece.

What can we learn from this simple lesson and how does it relate to what we see today in the corporate world? One of the lessons here is clearly the value of patience, something we know is lacking in the field of business. Our companies are run for immediate gratification to keep Wall Street numbers ever increasing with short-term gains.

Perhaps this short-term focus reflects the make-up of our management workforce. Typically, engineering is not a path to the corner office. A recent study in Fortune magazine^[3] says that C-level executives (CEOs, CTOs, CFOs, etc.) come from the following backgrounds—30.6% finance, 21.6% sales and marketing, 10.6% operations, 10.2% engineering, 6.2% legal, 3.6% consulting, and 8.6% other. Another 8.6% is identified as not available.

In the technology arena, how can someone who has no appreciation for what it takes to innovate in technology have any patience for the engineering process? Perhaps more than any other discipline, engineering is akin to art. And like art, good engineering often takes time.

However, many managers fail to grasp this concept, which may lead to a lack of appreciation not only for engineering but also for its practitioners. Too often engineers have been the Rodney Dangerfield of the organization, disrespected and misunderstood. The attitude among some managers is both apathy and ignorance as they think of the engineers as simply "doing whatever those guys do down there." In my experience, engineers make the magic work *in spite of* the business environment not *because of it*.

We can see many examples of engineering management disasters usually caused by management not understanding the art of engineering. For example, 3M was legendary for its innovation—much like the artist in the Twenty Heartbeats story working in his studio. But then the company was invaded by the "six sigma" methodology, which they tried to apply to innovation. Fortunately, someone noticed the mistake and called off the attack before the innovation culture of 3M was permanently damaged.

A recent article in Time magazine^[4] stated "Over the last several decades, American business, especially outside Silicon Valley, has been dominated by whiz-kid style financial engineering rather than real product-based innovation. But as experts like Harvard Business School dean Nitin Nohria have told me, efficiency gains in corporate America are largely tapped out. The real challenge of the next decade will be which countries can churn out entrepreneurs who can harness technology to drive down unemployment."

So, downsizing, outsourcing (especially to far off lands), cost reductions and so forth have been tapped out. What is left to drive the growth of technology businesses?

Just innovation and good engineering management. The latter balances knowledge of technology with sound business principles. These ingredients—together with a dose of common sense—are what tech businesses need to thrive.

Not too long ago we had managers who were engineers with years of experience. But business schools changed the philosophy, teaching us that a professional manager can manage anything with enough Excel templates. So as the professional managers took over, the engineering experience was gone. Unfortunately, time has shown that management by spreadsheet will not give you excellent results. If you can make decisions simply based on numbers, a computer can make the decisions for you and you can save those big C-level salaries!

What is missing among the professional managers is a gut feel for the business. And this was something that was commonly found in managers of the past, the ones who had come up through the engineering ranks. Of course, those managers would collect and analyze data, but it was not a crutch, an obsession or a “hide behind” if end results did not meet expectations. These managers mixed the data with their instincts while also calling on customers and field staff for advice. Then, taking all this information in hand, these managers made the best decision they could with imperfect data. In other words, they earned their pay!

In contrast, too many of the professional managers working in tech companies today are the finance types who look at spreadsheets in a vacuum and make decisions without much input from customers or the front lines. Later, when their decisions lead to bad results, these managers will hide behind the data or simply find someone else to blame. This is a poor excuse for leadership.

And how many times do we see this scenario: remote control, out-of-touch management that uses every available Microsoft product to manage the design process without ever observing the process, asking questions or engaging the engineering team?

It's interesting that in the Twenty Heartbeats story the wealthy man did not visit the artist during the time he was preparing himself to paint his masterpiece of the horse. During the long wait, the wealthy man only sent a single letter to the artist inquiring about the status of his painting. Today, the wealthy man would have sent him nasty emails demanding hourly status updates. Or more likely, the emails would have instructed the artist to stop practicing and update a project management worksheet PERT chart.

But consider an alternate storyline for the wealthy man and the artist. The wealthy man could have visited in person, observing the process, asking how he could help—learning what it takes to make a great painting. Or perhaps the man could have made a tradeoff, asking for something less than perfection so that he could get it much sooner. Good leadership is good communications.

Some advice for executives: Get out of the ivory towers. Spend time with, nurture, support and appreciate your engineering teams— they are your future. There are no more financial tricks left, so focus your efforts on helping your engineers to innovate.

References

1. [“Why Recruiting Looks Easy”](#) by Miles Jennings, Recruiter.com.
2. “Twenty Heartbeats,” by Dennis Haseley, available from [Amazon](#).
3. “Portrait of a Fortune 500 CEO,” Fortune magazine, September 5, 2011, page 22.
4. [“The Leadership Lessons of Steve Jobs,”](#) by Rana Foroohar, Time magazine, February 16, 2012.

Further Reading

1. On the subject of innovation, the author recommends the work of the [Innovation Movement](#) and suggests you sign up for their newsletters and eye opening information.
2. Another work that offers a similar lesson to Twenty Heartbeats is [Steven Covey's](#) “law of the farm,” which states that it takes two years to prepare the soil to plant potatoes. Though many have tried to find shortcuts to grow potatoes more quickly, it still takes two years to plant them properly. Thus “the law of the farm” reminds us that there is no substitute for quality effort sustained over time.

3. On the issue of sustainable success and the dangers of seeking short-term gains at the expense of sustainable long-term growth, the author recommends reading "[Chainsaw AI](#)," Business Week Online, October 18, 1999. This book excerpt tells a cautionary tale: "He anointed himself America's best CEO. But AI Dunlap drove Sunbeam into the ground."

About The Author



Kevin Parmenter has over 20 years of experience in the electronics and semiconductor industry. Presently the director of Advanced Technical Marketing for Digital Power Products at Exar, Kevin previously led global product applications engineering and new product definition for Freescale Semiconductors AMPD - Analog, Mixed Signal and Power Division based in Tempe, AZ. Prior to this, he worked for Fairchild Semiconductor in the Americas as senior director of field applications engineering. In this role, Kevin led the FAE team in the Americas region plus three regional design centers.

Previously Kevin held various technical and management positions with increasing responsibility at ON Semiconductor and in the Motorola Semiconductor Products Sector. Kevin also led an applications engineering team for the start-up Primarion where he worked on high-speed electro-optical communications and digital power supply semiconductors.

Kevin serves on the board of directors of the [PSMA](#) (Power Sources Manufacturers Association) and was the general chair of APEC 2009 ([the IEEE Applied Power Electronics Conference](#).) Kevin has also had design engineering experience in the medical electronics and military electronics fields. He holds a BSEE and BS in Business Administration, is a member of the IEEE, and holds an Amateur Extra class FCC license (call sign KG5Q) as well as an FCC Commercial Radiotelephone License.