Message from the Editor-in-Chief

More Steps Forward Than Back

Smoothly drawn learning curves disguise the fits and starts by which progress actually occurs. Real process improvement comes in spurts, some ideas applied quickly, others slowly. Some don’t work, sending the curve the wrong way — a step back after a step forward.

Sometimes progress can’t be recognized so it’s abandoned. Two hundred years ago that happened to the French development of interchangeable parts. Americans credit Eli Whitney with that in 1803, but Whitney’s story is largely folklore. His smoke-and-mirror so of the parts fit) was not truly accomplished in the United States until the 1840s.

In 1790, a Frenchman named Honoré Blanc built 1000 firearms with interchangeable parts, proving his system at a public exhibition at which assemblers drew his parts at random from barrels. Almost all the weapons worked. Thomas Jefferson happened to be present, and when he became president, he was confident that a man of Whitney’s talent could do the same thing. His confidence was misplaced.

Blanc may not have been the first. French gunsmiths began working on interchangeable firearms parts around 1720, trying this and that, a step forward and a step back. Building on three generations worth of technology, Blanc “put it all together,” capping his career by delivering 10,000 firearms with interchangeable parts to Napoleon.

However, rivals pointed out that results were shy of Six Sigma. Since every part didn’t fit every time, surely any craftsman who didn’t do the entire job himself couldn’t possibly integrate a firearm. In 1806 French bureaucrats shut down factory production, and French firearms production reverted to craft.

Successors to Whitney kept at it. By 1850, French visitors to the United States returned with wondrous tales of an “American System” of manufacturing that actually made interchangeable firearm parts. The amazing French did not realize that they had done it long before. The memory of their technology died with Blanc and his cohorts.

When people don’t “get it,” progress often stops. Many of the reasons we don’t get it aren’t technical. For example, people played with toy steam engines for centuries before James Watt finally made a practical one. In the 18th century it all came together — coal mines, metallurgy and, most of all, the conditions for social acceptance.

The history of quality has parallels. Statistical quality methods (unknown to Honoré Blanc) began in the United States and Britain in the 1920s. After WWII, quality management faded. When U.S. universities began to use quality texts only for advanced statistics courses, managers understandably said “yuck.” Only after quality practices were refined in Japan did they start to blossom in the West in 1980. Now, 20 years later, management pundits again declare TQM to be a faded fad, pushed aside by e-business and a host of other competing ideas.

In a hundred years, will Lean Manufacturing (or the Toyota Production System) have had a major impact, evolving into the business logic of the 21st century, or will historians find barely a trace? Because the Toyota Production System is a human centered innovation, one has to learn to think differently. Adoption is a major human effort, and we are now at a critical point. Lean manufacturing rolls together many of the “fads” of the past 20 years, but it could easily fade away to be reinvented during some future crisis. On the other hand, if a critical mass of practitioners now solidifies the base, Lean Manufacturing could continue to spread and evolve.

We’re now faced with a new challenge mix: e-business, globalization, “greening” of operations, mass customization, incessant demands for deeper cost reduction, and so on. Mastering these new challenges calls for improving both process integration and collaboration between people, both inside companies and between them. Well, we have more technology for integration and collaboration. What we don’t have is consistency of human practice to collaborate and integrate processes. That’s really what the details of the Toyota Production System add up to. It has much to teach us in this new age, so we need to redouble our effort — take at least two steps forward for every step back.

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