

The Best There Ever Was

When I participated in the General Elective Radiology Research Academic Fellowship (GERRAF) in the 1990s, the group of fellows was instructed in the Six Sigma methodology of quality improvement that then ruled the roost at GE. CEO Jack Welch, then America's most admired chief executive, did not invent the program, which had originated at Motorola, but he became its foremost apostle, using it to sweep away the corporate norm of large planning departments and middle management staffs and replace them with "self-confident entrepreneurs who would face reality every day."ⁱ

Six Sigma got its name from the use of sigma in statistics to denote a standard deviation, with Six Sigma aiming to reduce the rate of defective outputs in manufacturing to six standard deviations, or approximately 3 per million.ⁱⁱ It did so by focusing on the DMAIC methodology, with each letter representing a phase in a project. First, the system is Defined. Then key aspects of the current process are Measured. Data are Analyzed to determine the root cause of defects. Improvements are initiated to improve the process. Finally, the process is Controlled to ensure that defects do not arise.

Despite its allure, Six Sigma was criticized for many reasons. First, quality improvement experts questioned the supposed uniqueness of Six Sigma as a methodology and instead saw it as a mere reformulation of ideas that predecessors such as W. Edwards Deming had outlined decades before.ⁱⁱⁱ Second, companies in the retailer industry found that the all-encompassing focus on process improvement and efficiency often came at the expense of customer satisfaction.^{iv} Third, in contrast to its reported success with GE, many companies ranging from manufacturing to healthcare reported high Six Sigma implantation failure rates of up to 60-70%.^v Finally, according to research by a business consulting firm, publicly announced Six Sigma initiatives underperformed the S&P 500 91% of the time.^{vi}

Perhaps even more damning than the fact that Six Sigma often does not work is its tendency to overemphasize methods at the expense of purpose and the people who promote it. It tends to be excessively statistical and focused on reducing variation, which it takes to be defects, as opposed to creativity and innovation, which inevitably involve variability. It focuses too much on processes instead of the people the organization exists to serve and the personnel who can grow, develop, and contribute through service. It sees sigmas and p-values very clearly but is often blind to culture and character.

Many of these same shortcomings turned out to be embodied by Welch himself. Often credited with turning GE into the most valuable company in the world and dubbed "CEO of the Century," Welch in fact wreaked considerable harm during his tenure. First, as chronicled in David Gelles' book, "The Man Who Broke Capitalism," Welch tended to lead through

fear.^{vii} For example, he instituted an evaluation system in which 20% of employees were identified as top performers, 70 percent as adequate, and 10 percent as inadequate. Those in the latter group were meant to be fired, in an approach dubbed, “rank and yank.”

Welch showed no appreciation for loyalty. When he took over, he instituted mass layoffs and plant closures that terminated more than 100,000 people, earning the sobriquet, “Neutron Jack,” as in the neutron bomb. In addition, he aggressively outsourced and off-shored work, dramatically reducing the ranks of workers in food services, housekeeping, and the like. The company would shift to wherever present circumstances, such as exchange and wage rates, proved to be most favorable, with little or no thought to the human beings whose lives such nimbleness disrupted.

Welch’s top priority was not the long-term vitality of the company but its share price. He inaugurated a period of intense deal making, buying over 1,000 companies and selling more than 400. GE became much less a technology company and more a financial services company. It shifted from making things such as light bulbs, appliances, and aircraft engines to functioning as a huge bank, GE Capital, which eventually accounted for the majority of its profits. This enabled Welch to deliver a predictable return on investment, prized by the stock market. In effect, investors supplanted employees as the key constituency.

Welch was often credited with training a generation of highly successful business leaders. But ultimately, a focus on managing numbers and cutting costs is only possible when the organization overlooks people. One of the best tests of a leader is how the organization performs after the leader steps away, and in this sense, Welch was a dismal failure. GE, the only remaining company from the original Dow Jones industrial average, decreased in value by nearly 90% in the two decades after his departure, and the company was eventually broken up into three separate firms in aerospace, healthcare, and energy.

What did Six Sigma and its apostle, Welch, do to GE? To put the matter in contemporary parlance, it incited a great deal of moral distress and inflicted considerable moral injury. In treating processes as more important than people, it implicitly created a non-moral or amoral culture, one in which persons became mere functionaries who were known by their numbers. If employees and relationships could be completely described and accounted for in quantitative terms, this approach might prove sustainable, but because there is much about a person that cannot be quantified, the inevitable result is demoralization.

To put the matter simply, Welch did not care about fulfillment. He wanted results, and results meant numbers. If making the numbers meant making people miserable and undermining loyalty to the company, it was a price he was more than willing to pay. He was, in effect, disenchanting the company, abandoning its long and rich history and traditions, its

storybook connections to Nobel Prize winners and pioneers such as Thomas Edison, and its longstanding focus on innovation and excellence, installing in their place the pursuit of short-term profit at almost any cost.

To appreciate the limits of statistical approaches as a path to excellence, consider the story of baseball great Ted Williams.^{viii} It was the 1941 season, and Williams' batting average was .399, which would be rounded up to .400 – a historic achievement – if he would just sit out the last two games of the season, a double header. Instead, and against the advice of his manager, Williams insisted on playing. In the first game, he singled, homered, singled, singled, and reached first on an error, going 4 for 5 for the game and raising his average to .404. He was now a fully legitimate .400 hitter. Time to call it a season, right?

No. Williams insisted on playing the second game, as well. In his first at bat, he singled. Then he hit the ball harder than he ever had before, a double off the right-field wall. He then got one more at bat, a fly ball out. He finished the second game 2 for 3, with his average at .406. Rather than sitting out the second game, or even both games, to finish out the season with a .400 batting average, he insisted on playing in both, going 6 for 8 and securing his place in baseball history. Said Williams at the time, “If I am going to be a .400 hitter, I want more than my toenails on the line.”

Williams cared about the numbers. He wanted to finish the season a .400 hitter. But he also wanted to be a legitimate .400 hitter, which meant no rounding up. Yet to Williams, it was about even more than this. For if all he wanted was to finish above .400, why did he play the second game, putting his coveted average on the line? If .400 was the goal, why not just sit it out? The answer, of course, is that Williams was above all a baseball player and not an accountant. He loved the game, and he wanted to play. “I want to play it out,” he told the manager. “I want to play it all the way.”

This is what Six Sigma and Welch could never see. Numbers provide important markers, but they should never be mistaken for the game itself. To do so would be like following baseball with nothing but box scores and statistics, never actually going to the ballpark or at least watching games on television or listening to them on the radio. There is a lesson here for radiology and radiologists. No one can afford to neglect the numbers completely, and using statistics can sometimes help us get more out of ourselves and others, but if we ever begin to prioritize numbers over true purpose and people, we will have lost our way.

ⁱ Welch, J, Byrne JA. Jack : Straight From the Gut. New York, NY: Warner Business Books, 2001.

ⁱⁱ Laman SA. The Asq Certified Quality Engineer Handbook. Fifth edition. Milwaukee, WI: ASQ Excellence, 2022.

ⁱⁱⁱ Paton, S.M. Juran: A Lifetime of Quality. Quality Digest. 2002; 22.

^{iv} Hindo B, Grow B. Six Sigma: So Yesterday? BusinessWeek. 2007; 4038: p. 11.

^v Sony M, Antony J, Park S, Mutingi M. Key Criticisms of Six Sigma: A Systematic Literature Review. IEEE Transactions on Engineering Management. 2020; 67: pp. 950-962.

^{vi} Breyfogle, FW III. Let the real six sigma stand up. ASQ Six Sigma Forum Magazine. 2007; 6: pp.10-11.

^{vii} Gelles, David. The Man Who Broke Capitalism: How Jack Welch Gutted the Heartland and Crushed the Soul of Corporate America--and How to Undo His Legacy. First Simon & Schuster hardcover edition. New York, NY, Simon & Schuster, 2022.

^{viii} Montville, Leigh. Ted Williams : the Biography of an American Hero. New York: Doubleday, 2004.