EVOLUTION OF A BUSINESS MANAGEMENT REVOLUTION

An Interview with Dr. Mikel Harry, Ph.D.,
Cofounder, Six Sigma Academy, Inc.
Conducted by Daniel L. Quinn, May 2002

Dr. Mikel Harry is a cofounder and member of the board of directors of Six Sigma Academy. During his distinguished career, Dr. Harry has made many significant professional contributions, among them the invention of the Six Sigma Breakthrough Strategy® and the Six Sigma Black Belt concept.

Harry began his professional career with General Motors; he later joined Motorola, where he began to formalize his Six Sigma philosophies into a system for measurably improving business quality. In 1994, he cofounded Six Sigma Academy with Richard Schroeder, and he is credited for having personally led numerous successful large-scale corporate deployment initiatives. Among the many Fortune 500 companies that espouse and practice his system of management are General Electric, DuPont, Ford Motor Company, and Sony. He has personally trained and worked with such CEOs as Jack Welch (GE) and Larry Bossidy (AlliedSignal, now Honeywell), as well as their senior executive teams and technical communities. He has written a number of books and articles about Six Sigma. During his career, Harry has been honored with countless awards from a variety of organizations and institutions.

Harry has written many seminal publications, including most recently *Six Sigma Knowledge Design: Illuminating the Path to Successful Deployment* (2001). He also authored *Six Sigma: The Management Strategy Revolutionizing the World's Top Corporations* (Doubleday, 2000), which has appeared on the *New York Times, Business Week,* and Amazon .com best-seller lists. He is credited with other significant publications, including *The Nature of Six Sigma Quality* (1988), *Six Sigma Mechanical Design Tolerancing* (1988), and *Six Sigma Producability Analysis and Process Characterization* (1998). He also authored the Vision of Six Sigma series (1997), Breakthrough Technology series, and Six Sigma Concepts and Tools series.

Six Sigma Academy provides business breakthrough training, consulting, and implementation services to the Global 1000 for quantifiable improvements and tangible results. Founded in 1994, Scottsdale, Arizona-based Six Sigma Academy offers a full range of services, as

well as a suite of digital tools, to help companies achieve quantum results in profitability, client satisfaction, and business transformation.

Q: Where do you think that Six Sigma fits in a history of quality, and where would you like to see it go?

A: I think Six Sigma is now squarely focused on quality of business, where TQM is concerned with the business of quality. That is, when you adopt TQM, you become involved in the business of doing quality, and when you adopt Six Sigma, you're concerned about the quality of business. In a nutshell, TQM is a defect-focused quality improvement initiative, whereas Six Sigma is an economics-based strategic business management system. Didn't start off that way, but it has evolved that way.

So I see Six Sigma as a vector change. As I look across the history of quality from the era of craftsmanship, it's fairly continuous; each step is a logical continuance of the preceding step, built off the same fundamental core beliefs and principles, whereas Six Sigma represents a radical departure from that continuum. It's actually a reassessment of quality from a whole new perspective and frame of reference. It's a reinvention of the history, if you will, but it's a birth of a new history, and that's the way to say it. It's been the evolution of a business management revolution.

Let me tell you who it started with; it started with Bill Smith. Bill first came up with the idea in the early 1980s, and it wasn't called Six Sigma. Bill was studying the impact of quality on product reliability by establishing the linkage between defects and mean time to failure of electronic product. By the mid-1980s, I had joined Motorola and was running an area called Advanced Quantitative Research Laboratory. In conjunction with Bill, I used the laboratory to explore his assertions and examine other means to improve product quality. This was a big deal to us at Motorola because we had lost televisions, we had lost car radios, and we were thinking, how could this be happening to us? After a great deal of research, the answer to our product quality problems was simple—we needed a 50 percent design margin to improve our reliability, thereby better satisfying our customers' needs.

At first, I told Bill he was out of his gourd. Nobody in their right mind would have a 50 percent design margin; it was way too costly. Well, as I started doing some computer simulations to explore the idea, suddenly I started seeing a lot of merit to what Bill was saying in a complex system, when you look at the cross product of the capabilities. And at the same time, Bill was talking to Bob Galvin (CEO and chairman of Motorola at that time). And Bob loves to tell the story of Bill calling persistently to get Bob to meet him. To make a long story short, we continued to work on the concept and it evolved a little bit further.

After some time we started to call it Six Sigma. And then I wrote the first definitive work on it, called *The Nature of Six Sigma Quality,* to try to put an understanding around it that people could latch on to. And at about the same time, my work caught the attention of Bob. Bill and I had started to work together on a Design for Manufacturability initiative, later to become Design for Six Sigma. After a while things started to amalgamate into a collective effort.

And then in 1989, I wrote a paper called "A Strategic Vision for Accelerating the Implementation of Six Sigma within Motorola." As a result of this paper, Bob asked me to move to Chicago to create the Six Sigma Research Institute to further our quality efforts in engineering and service. It was at about that time, unfortunately, that Bill passed away—a tremendous and grievous loss to the company.

By now, I had been promoted to senior member of the technical staff and corporate director. In this capacity, Bob Galvin supported me very kindly and enthusiastically—he germinated the seed. And if it wasn't for Bob's wisdom and leadership, Six Sigma would have never come to pass. So those were two very significant players in the Six Sigma league. I always like to say that Bill was the father of Six Sigma, and I'm the godfather of it.

And so it started to propagate outside the walls of Motorola. We started developing partnerships with IBM, Kodak Digital, ABB, and Texas Instruments. With their assistance I brought in resources and other engineers and scientists to work larger-scale projects to further the whole Six Sigma effort. After this effort, Rich Schroeder and I went to Asea Brown Boveri (ABB).

At ABB, Rich and I got together and decided to refocus Six Sigma on economics. And in that first year, we focused on the transformer business at ABB to demonstrate the power of Six Sigma for increasing revenues. After this, Rich went to AlliedSignal with Larry Bossidy, and I began to formulate the Six Sigma Academy. After some discussion, Rich and I decided to make AlliedSignal the first global deployment of Six Sigma focused specifically on economics, because at that time AlliedSignal was in pretty bad shape financially.

Q: That was 1994?

A: Yes. We achieved enormous returns at Allied using Six Sigma as the primary intervention tool. Of course, Larry talked about those returns on the Street. Jack Welch and Larry Bossidy are good friends, and basically Jack requested that Larry bring it to GE for consideration.

Larry, Rich, and I talked, and basically the message came back to me that Jack wanted it. So I met Jack and we set a strategy of how to deploy it, starting with GE Medical, to create a large-scale application

example. In this manner, the other business unit leaders could see the results of it and then pull it in and across the corporation.

Of course, it was a very, very big hit there at GE, and I thanked Jack very much for mentioning me in his autobiography. That was a humbling experience. It is also interesting to note that Jack was a very challenging man. He forced me to face a lot of my assumptions and practices, always looking for a better way. So I would say that the experience of GE was a significant event, emotionally and intellectually, and in terms of discovering new ways to do Six Sigma faster and even better when it comes to implementation and deployment. With this challenge in hand, I was able to drive Six Sigma to the next level.

Q: That's an interesting point. You were a disseminator of knowledge across the business world, but how do you transfer knowledge within a global company?

A: It all stemmed from a trip in the late 1980s with Bob Galvin. At that time, Bob asked me to accompany him on a trip to speak to the chairman of the board at Boeing about Six Sigma. They were a big customer of ours. And on his plane on the way there, he studied one of my papers. After some time, he turned to me and said, "Mike, this is very fine work. My colleagues have reviewed it and find this to be very favorable. But," he continued, "my problem, which I soon hope will become *your* problem, is how do I get this to 52 locations around the world with people speaking different languages in *this* year?"

I thought, that's an interesting question. It's one thing to invent Six Sigma; it's another thing to disseminate it, and I accepted the dissemination challenge. And that's what brought about the Six Sigma Research Institute.

So when I talk about the total state of affairs of Six Sigma now, it is done with about 45 global corporations behind me. And after that many full-scale deployments, we've pretty much got this thing down to a science and to such an extent that I think DuPont is the premier model of implementation in deployment to date. Don Linsenmann, VP and corporate Six Sigma champion, and I, along with Charles Holliday Jr., their CEO, are currently doing a book on the leadership of Six Sigma at DuPont as an in-depth case study of what it really takes to implement and deploy Six Sigma. In a nutshell, Bob had the guts to be the first to step out with Six Sigma. Jack had the courage and leadership to be the first to globally deploy it in a short-cycled manner and connect it to financial returns. Finally, Chad Holliday had the vision to use Six Sigma as a business transformation tool and management system in a highly systematized and synchronous way.

Q: How did you see Work-Out and Six Sigma interrelating at GE?

A: A very complementary and consistent mixture for GE. See, that's the key—for GE.

Q: Going in, do you think Jack Welch overpromised? I mean, did he really know what he'd get on the other end?

A: I think Jack knew exactly what he would get from Six Sigma—not as a hard fact, but as a vision. Jack recognizes the capability of things, the subtle interconnects that a lot of people don't see, and he knows how to communicate that to the immediate people around him and align them and their values toward that direction, and it becomes like a self-fulfilling prophecy.

The Pygmalion effect is something that every good CEO masters. You can't lead a multinational global corporation without some charisma and vision and having the energy to align everyone's values in a common direction. The political skills to do that are essential. You need to reach these men and women and give them that vision and show them the tie of quality to the fundamental economics of a corporation and lay out a road map of how to exploit it in a way that is believable, that gains their trust, and say, "Let me lead it for you."

Q: The thing is that every company is not a GE, as you said before. So, if I'm a CEO looking at wanting to embark on Six Sigma, what do I have to think about as I start to do that?

A: What is there to think about? would be my response. You have the likes of Bob Galvin, Jack Welch, Larry [Bossidy], Chad Holliday, Sony, Toshiba—many of the great corporations of the world have implemented Six Sigma and prospered from it. What is there to think about? It's a no-brainer. It costs you nothing.

Or you can do the UFO or ABC thing—whatever acronym is the flavor of the day. When the alphabet soup of initiatives are packaged together and sold as "the way to prosperity," you can pretty well bet that Four Sigma will be the outcome. If you do this, you're probably a Four Sigma company today, and you'll be a Four Sigma company five years from now. If you truly believe in your mission statement and you want to be the best in the world, you've got to have some radical change. You need a major and highly focused intervention to alter the vector of your corporate momentum. As demonstrated, Six Sigma has the capacity and capability to do just that.

Q: Do you think Six Sigma is realizing the dream that you had for it?

A: Again, I hate to sound like an old cowboy here. I just wish Bill Smith could see our baby now. Because at the time, you've got to understand,

we're talking a couple of engineers way down in the company starting this little seed that we never dreamed would ever reach our corporation, let alone other corporations, let alone into the world, let alone become a new quality standard. Where is its place in history? I think that place in history is already sealed.

The significant things about Six Sigma have already been said by the people who needed to say them: the Nassers, the Hollidays, the Welchs, the Bossidys, the Galvins. Today, many writers on the subject are just recapitulating what has already been said. You move mountains with vision, with financial connection, with belief of leadership, not recapitulation of information. The most valid statistical equations in the world cannot change the vector of a corporation. People move things and leaders guide them to such action.

At the same time, over here sit defects, over here sits money. I'm talking actual profit, not nickel-and-dime stuff, but billions. Six Sigma makes the connection and leadership brings the bacon home, so to speak.

If you go back in the history of quality, to Deming's work or Juran's or Feigenbaum's or anyone's, we see the same aims as promoted in Six Sigma, but no direct connections between defects and high-level corporate metrics. Well, during their era we had a light switch and we had a lightbulb, and there was no wiring in between. But occasionally when they flipped the switch a miracle occurred, every now and then a bulb would come on. Every time it came on, the quality professionals said, "See, see." But they asked for a leap of faith when it did not come on. Essentially, Six Sigma made the light come on—each and every time. Thus, Six Sigma has replaced TQM and is now presented as a reliable tool for managing a business—not just improving product or service quality.

Q: They didn't know how it happened when it happened.

A: Because the connections were made with Six Sigma, Jack didn't have to make that leap of faith. It's not complicated or magical. Show me—I'm from Missouri. And last, go bring me the cash. You deliver the cash on my table, then we'll do more business.

So you show them the math, you go out there and pilot, you bring the cash in a great big box, you set it down in front of the CEO and say, "You want more of that?" Now, what do you think they're going to say? This is what Six Sigma does consistently.

Q: Are there some industries that it works better in than others?

A: Industrial organizations tend to measure things much more than commercial organizations. But oddly enough, Six Sigma is much easier to implement in a service organization than it is in a manufacturing organization, and people think that it's the other way around.

Commercial organizations don't measure little millimeters, volts, amps, and all of that, which involves the use of inferential statistics of a very precise nature. The only thing service people measure is time and money and counts of things. Because of this, less-sophisticated tools are needed to collect the low-hanging fruit, so to speak. Thus, it is easier and faster to implement.

You know, we had one, two, three, four patients die today. We screwed up 18 procedures. There is lots of count data, but most service organizations just don't know what to do with it or how to use it as a means for guiding improvement.

Here is an observation I made at Motorola in the very early 1980s: 85 percent of the data that we collected was count data, only 15 percent of the data was continuous by nature. And yet 85 percent of the tools we taught in the classroom, like SPC charts and stuff, was for continuous data. So 15 percent of our educational time was spent on the tools where 85 percent of our data was. Wow, what a mismatch! No wonder we couldn't get SPC and the like to stick to the wall.

Q: Could you comment on some of the fundamental cultural changes that you've seen brought about by Six Sigma when it's driven through companies?

A: In terms of culture, again, I hate to defer to the book *The GE Way* and Jack's book *Straight from the Gut,* but I think they say it all. Yes, it changes culture. Money is a very powerful force, and anything that changes the quantity of money coming into an organization will change the culture. Culture doesn't create money, money creates culture.

The only reason that we want to grow a company is to minimize transactional cost. What other reason could there be? Why else would you want to grow? You seek growth so that you can spit out more units at a lower unit cost to derive greater profit. Therefore, Six Sigma is about the quality of how that system functions. In that sense, it's about the mitigation of risk. All defects represent risk, but not all risk is manifested in the form of defects.

So if you're in the business of quality and the antithesis of quality is defects, you're only tackling a small fragment of the total business picture. However, by focusing on economics, that causes you to focus on risk, which is a much larger picture. That's why I say Six Sigma is about being focused on the quality of business, not being in the business of quality.