

# 3 Questions: Steven Spear on Toyota's troubles

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The Prius was among the models recalled recently by Toyota because of problems involving sticking accelerator pedals and brake systems. Photo: Wikipedia

For decades, Toyota has been viewed as a paragon of corporate improvement, innovation and effectiveness, qualities that helped it become the world's largest automaker.

But the firm's reputation has been sorely tested in recent weeks amid a string of well-publicized recalls involving millions of Toyota vehicles due to problems involving sticking [accelerator](#) pedals and brake systems. In the words of Toyota's president, Akio Toyoda, the firm is "in a crisis."

Steven Spear, a senior lecturer in MIT's Engineering Systems Division, is one of the leading experts on Toyota's management system. He wrote about the topic extensively in his book, *Chasing the Rabbit: How Market Leaders Outdistance the Competition* (McGraw-Hill, 2008), and in a 1999 Harvard Business Review article, "Decoding the DNA of the Toyota Production System." With Toyota in unprecedented turmoil, MIT News talked to Spear about the Japanese automaker's problems — and potential solutions.

*Q. What went wrong with Toyota?*

A. What went wrong with Toyota is the flip side of what went right over so many decades. In the late 1950s or 1960s, Toyota was a pretty cruddy car company. The variety was meager, quality was poor, and their [production efficiency](#) was abysmal. Yet by the time they hit everyone's radar in the 1980s, they had very high quality and unmatched productivity. The way they got there was by creating within Toyota exceptionally aggressive learning. They taught employees specialties, but more importantly, they taught people to pay very close attention to the "weak signals" the products and processes were sending back about design flaws, and then responding with high-speed, compressed learning cycles to take things that were poorly understood and convert them into things that were understood quite deeply.

That allowed Toyota to come from behind, race through the pack, and establish itself as the standard-setter on quality and efficiency. But since then, things have affected Toyota in terms of their ability to sustain this kind of aggressive learning.

One was just the sheer growth of their business. Toyota historically had operated out of their base in Japan, Toyota City, and was largely an exporter. Then in the 1980s they opened up plants in California and Georgetown, Ky., and over time added plants in China, Europe and so forth. And that put a burden on developing people at those plants and the regional supply networks that supported them. Toyota had traditionally depended on a very intimate mentoring-apprenticeship model, where someone might have a coach for up to two years — a real Karate Kid-like approach to developing people. But the sheer number of people in a given year who had to be in this mentorship model went up. And I think Toyota got in trouble because they just overburdened that capacity — not necessarily the technical capacity, but the capacity to develop people.

*Q. So the drive to become number one seems to*

*have affected them?*

A. Yes, but also, when you look at the auto industry as a whole, the mid-1980s was something of a watershed as you go from mechanical cars, as they were in the 1950s and 1960s, when everything was just steel — engines, gears, bodies — to being electro-mechanical with highly intertwined electronics. If you look at the modern car, the amount of computation on board with traction control, anti-lock braking systems, air bags, cruise control, navigation, entertainment, and more, makes it a very sophisticated, complicated machine, far beyond anything made 20 years prior. Bringing electronics on board brought huge advances in performance and reliability but with it came an exponential jump up in the complexity of the systems you're managing. And the complexity puts even more demands on the concept of aggressive learning, that is, building something, paying attention to what's wrong, and rapidly doing the experimentation to make it better and better. In short, the mentorship concept gets doubly stressed — by the need to scale up and by products and processes that are far more complex.

*Q. What can Toyota do now to fix things?*

A. There are three challenges: technical, organizational and public relations. The basic questions of why do accelerator pedals stick, why do braking systems suffer difficulty — I have confidence that Toyota will concentrate their engineering talent on those problems and make them go away. And I'll leave others to comment on how you manage the public relations side in skillful fashion.

But then there's the organizational piece: How do you develop people more quickly? The good news is that some people in Toyota seemed to see this problem coming five to 10 years ago, as I mention in my book, and started to build new ways into the organization of teaching people that didn't depend on this very slow-moving mentorship model. Obviously they have to step up their understanding of how to develop people more quickly.

In terms of thinking ahead, when I first studied Toyota I noticed they had this kind of cultivated

paranoia. Every time I would try to compliment people at Toyota about their success, they would say, "Wait a minute, hold on. Don't compliment us. GM, the sleeping behemoth, may awake." Or "Who knows if Kia will develop the capacity to catch us, like we caught others." Then there was, "In China there must be 1,000 car companies, and we can't even name them all, let alone identify the one that may catch us." So I think this really bad product failure is probably fuel for another two solid decades of cultivated paranoia. If there was a complacency problem at [Toyota](#), which there may have been, my goodness, if this doesn't flush that out of the system, nothing will.

Provided by Massachusetts Institute of Technology

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