

Tad Yamaguchi, mixing modern imagination with social tradition, visualizes the unseeable

For Tad Yamaguchi, new chief engineer, success has been a combination of modern imagination and long-standing social tradition. Tad — who holds ten U. S. patents, has published



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over 60 technical papers, and was the 1988 recipient of IEEE's Paul Rappaport Award for the best paper on electronic devices — believes that part of being an electrical engineer is being able to visualize what you can never see. "It's an imaginary world that can only be understood by creating imaginary models," he says.

Born in Miyazaki, about 700 miles south of Tokyo, Tad's interest in electronics developed when he was 12 years old and a teacher first lectured about electrons. Tad received his BS degree in Electrical Engineering in 1969 from the Miyakonoyo Institute of Technology in Japan. That same year he joined the Sony Corporation, working on wafer processing and device characterization. Recruited to Tek in 1977, he currently manages the team charged with developing high-speed self-aligning bipolar technology and integrated circuits. The advantage of self-aligning ICs is that they require

fewer layers and smaller geometries than conventional ones. But since the devices are 10,000 times larger than an electron, Yamaguchi still believes them large.

"Right now we're developing a circuit technology that will improve the speed of Tek's next generation of instruments," says Tad. "Solid state electronics will drive the economy for at least the next 50 years, which is why Tek must help drive solid state electronics."

Since 1984, his group has been working on different phases of bipolar technology. The fastest generation — called GST-1 — is in the prototype stage, having taken four years to build, a period which included the construction of a \$20 million facility for IC fabrication, which Tad also managed.

Tad has two children, the oldest in 3rd grade, which brings up the second ingredient of his recipe for success: social tradition. When asked how his child's education matched his own in Japan, he observes that the two are quite different: "Japanese schooling is more competitive," he says, "with pressure to compete coming from everywhere, including parents and society. This is especially true since going to a top university will mean a ticket for success for one's entire life."

Though rarely discussed, Tad ob-

serves that while 30 percent of Japanese students compete fiercely, 40 percent are average, and 30 percent have no desire to strive, continually falling further behind their brethren. Based on performance, this latter group cannot attend a first-class university and will be limited to working for smaller companies or being self-employed. But

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since Japan is such a unified society, the cultural push to succeed is always there, despite performance. "I don't think students know why they are trying to beat each other," he observes. "I remember driving myself to succeed and being disappointed not with a 'B' grade but with myself. That willingness to internalize my disappointments drove me to get 'A's.'"

In Japan — in addition to a competitive work place — the workday does not end at five o'clock. Employees are expected to socialize with their co-workers frequently until midnight, in an effort to forge an atmosphere of camaraderie that permeates the workday. "I'm sure that a number of Japanese would like to go home and enjoy their families," he says. "That's a basic human need. But in Japan, wives — since the country is still male dominated — don't expect their husbands to come

home in early evening every day. They expect them to spend their time talking with their co-workers and supervisors so they can build their careers." For this reason, wives tend to be supportive of prolonged daily absences, understanding that the long hours in the company of co-workers — both officially and unofficially — are part of career responsibilities.

Tad, however, has opted for the American style and goes home at the end of the day. "Ever since I was a kid," he notes, "I was attracted to the Western style of life, which is a common trait in Japan. The Japanese, at the bottom of their hearts, are attracted to Western products and concepts. Today, if American products were less expensive than Japanese, most Japanese would buy them because of their long-held mystique."

Tad believes this mystique is one reason why he wanted to experience the United States, even at an early age. "I wanted to learn and understand U. S. culture and language. I also knew that I wanted to be an electrical engineer, but on an international scale. When a manager from Tek Labs — who knew what I was working on — visited Sony and offered me a job here, I grabbed it immediately. This was my chance, and I finally got to come to America for the first time," he recalls.

Tad has the unique perspective of

having been raised and educated in one of the world's two industrial powers, and of having worked in the other. For him, Japan's business success is as rooted in cultural tradition as in corporate efficiencies:

- **Parental respect.** "Fathers and mothers are seen as Gods," he says, "and when they ask you to succeed at school, you do all you can to please them as a demonstration of respect. Parents do not endlessly repeat this

Other chiefs

Other Tektronix chief engineers and scientists are Agoston Agoston, Gene Andrews, Graeme Boyle, Phil Crosby, Gordon Ellison, Arnie Frisch, Val Garuts, Linley Gumm, Art Metz, Chuck Saxe, Mayer Schwartz, Tran Thong.

request, instead trusting the child to see that parental wishes are adhered to. When I did well in school, all they said was that I had done a good job and that I was a good kid. That's all."

- **Trust.** "When you graduate from school and go to work for a company, you leave one family and enter another as defined by the immediate group you work with. Group members are seen as older brothers and you as the younger one. As in America, you build trust in that group by doing a good job. But in America the function of work is to make money; in Japan, it is to make money and to be a trusted

member of an extended corporate family. Teacher/student, parent/child relationships act as the foundation for the atmosphere of family within the corporation, so that when children transition from their biological families to corporate ones, they do so with concepts of the respect for authority intact."

- **Maturity.** "In America, children are raised to be confident that they can do a job. Teenagers will try to convince you that there's no task they can't handle. And when they are hired, it's with the expectation that they can do whatever is asked of them. In Japan the opposite is true, where young people are always perceived as requiring additional education. Even new Ph.Ds believe that the first five years on the job is a continuation of their education. Managers, however, must be able to teach. If they cannot, respect will not follow; if they can, their work family will follow them forever."

Was coming to America the right decision for Tad? "The early results look good," he says, noting that decisions are usually good when the end-result is successful and bad when it is not. "Once I make a decision, I do my best to make it work, which means most of my decisions become the right ones. That's my basic philosophy."

—Charles Martin