

Enterprise 1999

Professors speak to the future

TWO CARNEGIE MELLON UNIVERSITY IN FACULTY
MEMBERS MELD CREATIVITY
WITH CUTTING-EDGE TECHNOLOGY

ON JOE MANDAK • TRIBUNE-REVIEW

Scott Stevens used his scientific instincts to make gunpowder as a kid in Chicago.

And' in fifth-grade he built an induction coil - "that thing where the sparks go up between the two wires, like in the Frankenstein movie," Stevens explained.

Meanwhile, Don Marinelli was entertaining his New York school chums by writing gangster stories. The first one, penned in the third-grade, "was like the Untouchables. For us in Brooklyn, that was more like a fable," Marinelli chuckled.

"From then on, I was either writing stories or acting them out. The teachers would take me from classroom to classroom and say, 'Do your show.'"

Today, Stevens, 48, and Marinelli, 45,

are professors at Carnegie Mellon University in Oakland. Their backgrounds have fused into the curious blend of technology and drama that is "synthetic interview technology."

The system, which they are marketing through a business called Grand Illusion Studios on Henry Street near the CMU campus, uses computers that can respond to spoken commands.

When that computer is coupled with a database of video clips of famous people, or actors portraying them, one can have a conversation with an animated two dimensional Albert Einstein, or other famous individual.

Marinelli and Stevens originally wanted to market their product via kiosks. For example, they'd put a screening booth containing a virtual Michael Jordan into a sporting goods store to draw customers.

They've since decided to focus on Internet applications.

"People spend huge amounts of time on the Internet in chat rooms, and now you have these celebrity chats, where millions of people might submit questions. Paul McCartney conducted one not to long ago. But in that format, eight or 10 people out of those millions might get their questions answered," Stevens said.

"And we're thinking, what if we could capture that kind of thing but make it available on demand all the time?"

Another application would be interactive training devices, in which employees could have virtual conversations

With two-dimensional supervisors equipped to answer their questions, Stevens said.

But aside from its practical implications, Marinelli said their project has also broken down the stony, stereotypical walls between science and the arts, and taught them a lesson that many businesses still struggle to apply:

It takes creative people to produce cutting-edge technology.

Greg Stevens, no relation to Scott at CMU, is president of WinOvations Inc., a Midland, Mich. consulting firm that specializes in helping companies identify their creative people.

In 1997, Stevens pitched his theories to Alcoa and other Fortune 500 companies at the Industrial Research Institute symposium, a gathering of about 300 research and development types.

WinOvations uses psychological tests to identify creative employees -whom

he calls "rainmakers" - who would be best suited for research and development projects.

Stevens then teaches companies how to train their creative folks to apply business principles to their work so they churn out profitable products instead of interesting, but ultimately unmarketable, ideas.

Stevens said one study of new product analysis at a major chemical company showed that analysts who scored high on the creativity test he administers generated 95 times more profit for the company than those with "low" creativity.

But identifying creative employees is only half the battle.

"The worst thing that people could do is get the rainmakers together in a room and don't give them any business process to follow or any coaching and then give them \$20 million to spend," Stevens said.

"What they'll do is spend \$20 million - plus \$200 million more. They'll wreck your business that way."

"Creative types are hard to manage, and they do need discipline. But you can teach business discipline to creative types, but I don't believe you can, in a lasting way, teach non-creative people to be creative," Stevens said.

But Marinelli believes creative people can rub off on others, and vice versa.

"Once you start laying out the technology, there are a whole level of human factors and design factors that cause (the technology people) to say, 'We need the creative people here.' And you have the creative people saying, 'Gee, I'd really like to do that technical stuff,'" Marinelli said.

Marinelli laughed when he recalled how a New York Times writer in the mid-1980s described the tension between CMU's two dominant academic cultures

- drama students and computer scientists.

"He wrote that it was a school comprised of fruits and veggies," Marinelli said.

His technological collaboration with Stevens has spilled over into CMU's School of Drama, which will offer a master's degree program in entertainment technology for the first time this fall.

Marinelli said the drama school's foray into technology was borne of necessity-helping graduates find jobs in the entertainment industry. And despite the fact that CMU grads include "NYPD Blue" creator Steven Bochco, and John Wells, the executive producer of "ER," Marinelli felt the university could do better.

"We did not educate our students in television, per se, although we've had alums, you know, who've done very well in TV. But the school of drama really didn't prepare our students for that in the early 1980s," Marinelli said.

"At the same time, there was a lot of new technology going on with the computers, and I kind of made a vow that ... while we were very slow to awaken to the potential of television, I thought, 'Not this time.'"

Perplexed, but unsure how to address the problem, Marinelli five years ago heard through the university grapevine that Scott Stevens had received a major federal grant to study computer technology as it applies to multimedia.

"So, I called Scott and said, 'Can I play in your sandbox?'" Marinelli said, and synthetic interview technology was born.

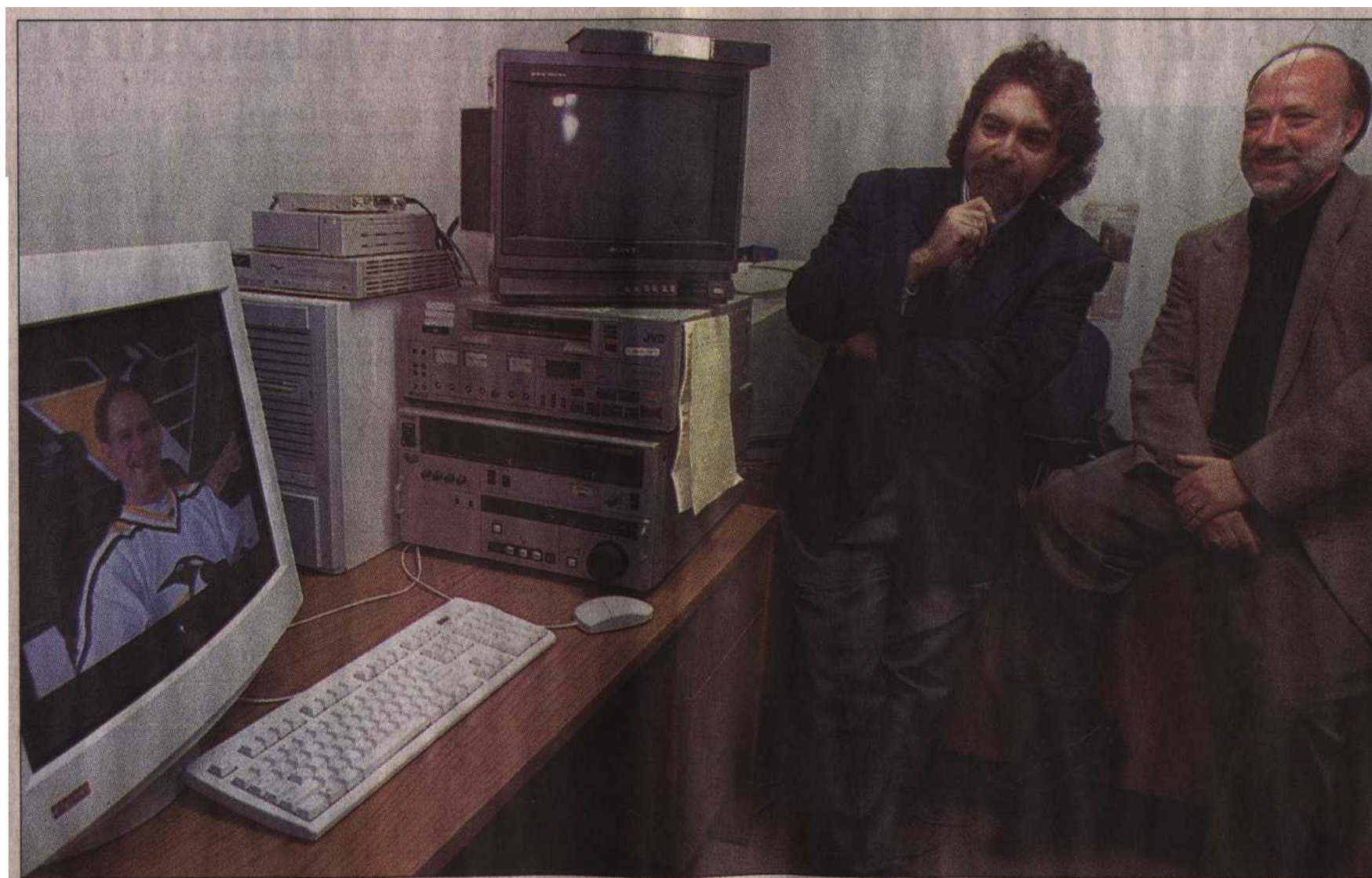
Dean Pomerleau and Todd Pochem are the proud parents of a different kind of technology; Their challenge isn't tapping their hidden creativity, but marketing it.

Pomerleau, 34, of Wexford, and Pochem, 31, of Gibsonia, own AssistWare Technology, at 12300 Perry Highway in Wexford.

"Our primary product is a system that we have now in prototype. It looks about like a radar detector ... and it determines when you're about to drift off the road," Pomerleau said. "It provides sort of a real-time feedback as to your drowsiness level and an audio warning."

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Eric McCandless/Tribune-Review

Don Marinelli (left) and Scott Stevens of Grand Illusion Studios of Oakland watch a synthetic interview they created with Pittsburgh Penguin Joey Mullen. Marinelli

*'For me, it's almost a game.
It's a competition.'*

Todd Pochem
Co-owner of AssistWare Technology

A good portion of Mark Huston's job is to play the fortune teller.

Huston is the director of the New Product Development Team at Kennametal Inc. of Unity Township, a carbide steel manufacturer.

One of the newest technologies in use at Kennametal is electromagnetic balancing for high-speed rotating tools, such as drills and milling machines.

Balance is essential for such tools to perform with the high degree of

precision needed to produce carbide steel components, and to prevent undue wear and tear of the tool itself, Huston said.

And while developing an electromagnetic balancing system might seem mundane compared with birthing virtual Einsteins or buses that drive themselves, creativity is still a key component.

"I think with respect to tooling tools and manufacturing, there are two main things we do out here.

One is material science, coatings and things like that," Huston said.

"Then there's the mechanical side of things. The guy who played with his erector set is a good example of that kind of guy, or the guy who, when he was young, if something broke he took it apart instead of throwing it away."

"But these guys also have to be able to apply science and some physics to this mechanical knack they may have," Huston said.

Although there are some guidelines for finding such an employee, Huston said it's an inexact science.

"I can't pick them out, no. I find it difficult to do that. But a lot of times you see them coming up through the ranks ... the machinist who really takes a lot of care to make sure that his tools are" excellent, Huston said.

"In an interview, I always ask the guy what he does outside of work. If

the guy's got a hobby that tends to lean toward a mechanical or creative thing, if he restores old cars, for example, ... that's a good sign.

"I like that a lot better than a guy who tells me he likes to golf a lot for his hobby. That's not to say that I don't have any good engineers who aren't also good golfers," Huston said.

"It's a given that you'll have some guys who come in when they're supposed to come in and leave when they're supposed to leave, and that's about it but then there are the guys who give 120 percent, 120 percent of the time. Their reward is seeing the product completed and seeing the customer satisfied," Huston said.

"They do it because they want to and not because you're paying them to. If you figure out who knows how to find those guys during an interview, you let me know."

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Their product stems from post-graduate work they did on so-called "smart" vehicles at CMU.

While they succeeded in developing a bus, a car and a minivan that drove themselves, Pomerleau and Pochem wanted to see if they could market what they'd learned via a product cheap and practical enough for everyday use.

"Both Todd and I have been in academia for eight and 11 years, respectively," Pomerleau said, "and basically, we're ready for a change."

In three years, Pomerleau and Pochem have sold about 25 of their systems - at about \$20,000 each - to two basic groups of customers: academic institutions who use them for research; and vehicle companies who are evaluating the usefulness of the technology.

But what drives the duo is developing a version of the unit that the average Joe could afford. "We aim to make it available for well under \$200," Pomerleau said.

"For me, it's almost a game. It's a competition," Pochem said.

"There's a very distinct goal to get this product to market and succeed as a company. When I was at CMU, and there wasn't a goal to shoot at, it was incredibly boring and almost stagnating.

"The thing we talk about a lot is going into Best Buy or Circuit City and buying one of these off the shelves, and have people do that - just like radar detectors," Pochem said.

Although he's living a dream, Pomerleau said that dream was beyond his imagination as a young man.

"Looking back on my childhood, I wouldn't have been surprised if I knew I'd become involved in some type of science or technology. But I think it would have been hard to predict, when I was 14, what would even be possible today," Pomerleau said.

"I think you would have been quite a fortune teller to even predict this area of technology would exist, let alone to say that I would have become involved in it."



> www.cmu.edu/home/research/research.html will take you to the research home page of Carnegie Mellon University.

> www.winovations.com is the official Web site for WinOvations Inc., based in Michigan.