Bucharest or Beaverton

Agoston makes fast scopes go faster

(The Chief Engineer/Scientist designation represents the highest level in Tek's six-step career path for engineers and scientists.)

Seventh in a Series

By ART ANDERSEN

Reaching the top rung on Tek's technical ladder isn't easy, but then Agoston "Aki" Agoston never had things just handed to him. Education for one, United States residence for another.

In post-war Rumania, the state favored the children of workers and peasants. They were the regime's first choice for those scarce admissions to university-level education. Because Aki's father wasn't of the working class, Aki would need superlative test scores to have any chance of getting into Rumania's top technical school, the Polytechnical Institute in Bucharest. It would take some luck too.

In 1961, his luck came in the form of a draft notice.

In the Rumanian Army, as a next-to-the-bottom-ranked soldier, Aki maintained VHF radio systems. Here he used skills gained earlier in emulation of an older brother, a telecommunications engineer. But more important, Agoston had time to work on his math and science, time to acquire that edge that enabled him to "ace" those tough admissions tests.

He continued lucky. At the Institute, Aki met Maria Agoston. And he got to start two families. One is a family of Rumanian oscilloscopes. The other now lives in Beaverton and has four members. Two are children and two are engineers.

Maria Agoston designs software. She's a software/hardware engineer in CASE, the Computer Aided Software Engineering Division. Son Tony is ten and in the Talented and Gifted Program at Hiteon School. Daughter Monica at three is already a skier like Dad, and her maternal grandfather. Three generations slide down Mt. Hood together these days.

Now why did an impoverished nation like Rumania want to make their own scopes? No cash! The country just didn't have the hard currency demanded by the sellers of foreign-made instruments.

The scopes Aki sweated over at the Research Institute for Electronics in Bucharest turned out well, reasonably state-of-the-art considering that most of the components, including semiconductors and CRT, had to be off-the-shelf. Dual-trace, dual-sweep, 100-MHz-bandwidth features marked them as significant performers. They featured sampling too—that is, subnanosecond performance—thanks to Aki.

"They were not copies," Aki emphasizes. The circuitry was designed at the Research Institute for Electronics, where he worked after graduating from the Polytechnical Institute. Mechanical innovations such as cam switches added to the technological significance of these scopes. There were plug-in versions, and one portable. The portable was pretty much comparable to the 100-MHz Tektronix 465.

Aki's work gained him international status in his field. He was active in the Institute for Electrical and Electronics Engineers (IEEE) too. But the state would not let him outside Rumania to participate in conferences, even when he was on organizing committees. He couldn't even go next-door to Hungary, another Communist state.

In the face of such frustrations, he and Maria decided to leave, and to apply for a position with Tektronix. But how were they to exit gracefully?

He was lucky again. Maria landed a contract to teach in Algeria. Aki would go along as a spouse, if the state would grant permission. They did. Algeria had just broken the "shackles of imperialistic, capitalistic domination." That helped. They went, and Aki landed a teaching post too.

From Algeria the Agostons applied for admission to the United States.

They got it in 1980.

Since then this lucky man has contributed immeasurably to the health of Tek's scope business. Through the repeating cycles of the design engineering process, Aki has repeatedly conceived an idea or solution; then he has investigated, prototyped and tested that concept. Some ideas work out, creating yet another new circuit to become a key element in a key product. Other ideas don't have as fast a payoff; they add to a base of ideas for others to draw on. Agoston Agoston does more than repeat his name. He repeats engineering excellence.

Of course he doesn't do all this solo. He credits many people for his projects' successes. For the most part he works with people not as their boss but as a team leader.

For example, he lead a team of three on a breakthrough sampler. Their names—John Carlson, John Rettig, and Stan Kaveckis—appear, one each, on three Tek patents with Agoston Agoston.

This kind of close working relationship is not radically different from what he knew in Rumania. Relationships with higher management there, however, were more formal. The "Director" was a distant figure, rather than someone who talked to you from time to time, on a first-name basis.

Aki was hired into Lab Instruments Division in 1980. In 1985, he moved across the street to the Electronic Systems Laboratory of Tek Labs.

Tek and others were pushing electronic circuitry pretty much to the speed limit. And they were struggling to keep the side effects of the measurement process from screwing up the very things that customers were straining to see. Electro-optics was seen as a way out. And that's what Aki and his co-investigators have been working on the last two years. A lot of this action in electro-optical sampling now goes on in two small spaces in Bldg. 50.

On the third floor of the Technical Center (50), Aki sits in the classic researcher's den—"office" could be the wrong word. The place is not neat exactly, but still ordered, with books, note pads, desk, table and chairs distributed in an eight-by-ten space. His window looks across to Bldg. 48. Right angled to his window, a short selection of floor-to-ceiling wall backs up the desk. A few years back, such a space would have had a drawing board too, and many more papers, notes, and reference materials. These would be stacked high on every flat surface, including the floor.

The personal computer has changed all that, getting rid of much of the paper once essential to day-to-day engineering. As a standalone workstation, or linked to a host computer for extra power, it does much of the "grunt" work of the design. It has also lessened the need to build and test a whole bunch of prototypes. Instead you can now prove out circuits by computer simulation. Still, the need for a lab and actual physical prototypes hasn't gone away.

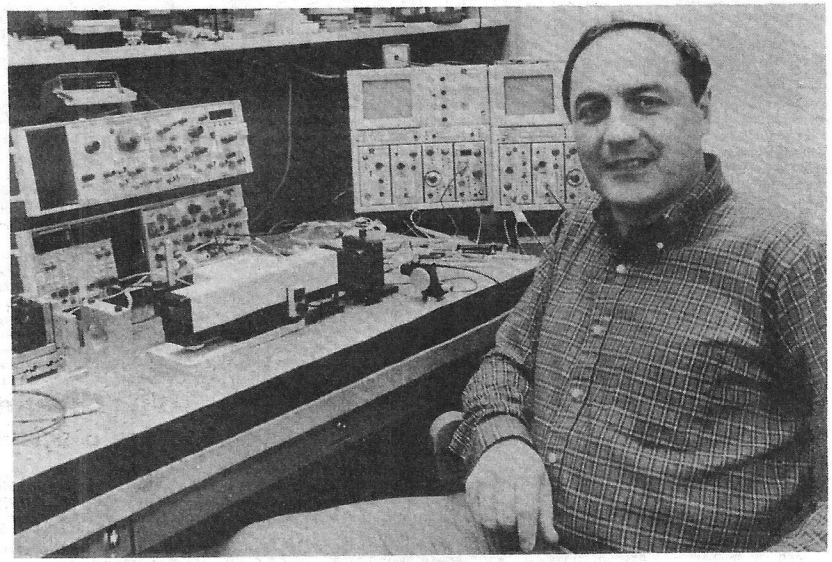
Agoston's lab is a few steps away. Here, in a space about twice that of his office, he and his team do electro-optical research. It all has to do with acquiring and processing very fast electrical information, events that exist for just picoseconds and often involve little energy. On a bench sits a neat assemblage of thin piping, small metal enclosures, and complex hybrid circuits. Here the ancient paradox of measurement science is still the challenge—that is, how do you measure without disturbing the very information you are trying to understand?

Modulating laser light is one way. If done right, you can get gently into the micron-sized geometry of fast ICs to see very fast action indeed. In doing this you abstract just a tad of energy, just enough to wiggle the light output of certain lasers. You've gone into the wilderness on foot, so to speak, not on a bulldozer.

Once acquired that wiggle can be processed to drive CRT eventually, or the wiggle can be digitized and computer analyzed. Tektronix customers will be given the power to view and understand some pretty subtle, fast things. And they will know what they see is true.

All this picosecond stuff is a far cry from the steam engine Aki built when he was about twelve. And the multimeter he built when he was 16. Still its all been logical progression. Some skills aren't acquired overnight.

Aki Agoston brought his stock of persistence and hard-won skills—and his knack for the game—to Tek seven years ago. It's paid off. For us all.□



Agoston "Aki" Agoston and his team do electrooptical research at Tek.

32 words say it all

The "Professional Career Summary" for Agoston Agoston put together a year ago is not something for casual reading. If you dig into it however, some interesting "stats" can be derived. For example, let's categorize and count the high-impact words in this four-page document.

The new-idea word *conceived* shows up ten times. The checking-out-the-possibilities words such as *tested, concluded, demonstrated* appear six times. The saleable-results words such as *invented, productized, implemented,* and *completed* total eight. Add the eight *patent-applied for's* and we find thirty-two power words to summarize six years of hard work. Words used in heavy statements like this:

> "Conceived and demonstrated the feasibility of a sampling-based dual-vernier interpolator with surface accoustic-wave reference oscillator used as a single-shot picosecond-resolution time-interval measurement subsystem in a pseudorandom-sampling timebase.

That mouthful of compound modifiers is number 11 of 15 "Key Inventive Results."□