



Henry Kloss (the K in KLH) is not famous as a successful businessman.

With his projection TV starting to take off, he doesn't particularly care.

by Richard Wolkomir.

photography by Herb Snitzer

The Wizard's Revenge

Kermit the Frog is astonishing, the size of a tyrannosaur. The green face is five feet high. More Muppets flash on the huge television screen. They are enormous, hypnotic in this shuttered room in a factory in Cambridge, Massachusetts.

"That whole idea of the flaky, baggy-clothed inventor—one is finally reconciled to that," says a mellow baritone voice from the dimness below the screen. "A bit annoyed, though."

Like the Wizard of Oz revealing the Emerald City's jumbo talking head to be so much technological flimflam, Henry Kloss (pronounced KLÖS), father of the projection-television industry, rises from the set's controls, where he has been trying to find the sound. He is not tall, built something like Smokey

the Bear, and bald above the treeline. But his human presence instantly converts the giants on the screen behind him to electronic phantasmagoria.

"When projection TV first appeared, people thought it was an evil monster, Big Brother in the living room," Kloss says, not even glancing at the colossal Muppets, his blue eyes distracted.

The set, he says, runs continuously for tests, and someone has disconnected the sound. But his mind is on a question his visitor asked earlier, about his reputation as the eccentric wizard of the home-entertainment industry. It is a subject he has pondered often. It makes him grit his teeth, which he does when irritated. Why are they saying these things about Henry Kloss?

They say, for instance, that he was a creator of the high-fidelity industry. That is OK. After all, he was a founder of Acoustic Research, which marketed the first compact hi-fi speaker for the home. He was the K of KLH, which introduced reel-to-reel tape decks with Dolby noise reduction. And he founded Advent, the company that built some of the best-selling speakers in the industry's history.

And they say that Henry Kloss is the father of large-screen projection television, which also is OK. After all, it was to market such a television that he founded Advent. And he is the founder of Kloss Video and the inventor of the Novatron tube for projecting blown-up video images onto a screen.

They—people in the home-entertainment industry, in the press—also say that Henry Kloss may be a crackerjack inventor, but he is no businessman. And that definitely is not OK. "One is not a tinkerer!" he fumes, his teeth clenched.

They rub it in. Not only, they say, is this founder of famous companies no businessman, but he is an eccentric who wears his gray hair long and braided in back. Which happens to be true. And they say he drives an aging Checker instead of the Cadillac befitting a corporate tycoon. Which also happens to be true. And they say he avoids the pronoun *I*, usually referring to himself as *one*. Which is, in fact, how he talks.

He objects to some parts of his image. "One is not a tinkerer!"



Above: Kloss refines a new tube for high-resolution TV at one of the small workshops scattered around his factory. A NovaBeam Model Two in the last stages of engineering sits in the foreground. Below: Lenses for Novatron tubes are polished by machine.



And they say he wears only tan chinos (individualized by stains) and blue shirts (also stained) with buttons popping open. And it does happen that today, showing a visitor through the plant, he is wearing tan chinos (a grease stain on the left calf) and a blue button-down-collar shirt (stains on the left shoulder) with buttons popping open.

But what really nags is Advent, because the company—despite its products' popularity—went broke. Was it because Henry Kloss was no businessman? So said the banks. Or was it because he was way out there on the marketing frontier, shepherding in a big new technology, and they cut his supply lines? Kloss prefers the latter view.

So how did a technically minded fellow from Tyrone, Pennsylvania, get into these corporate adventures in the first place? According to Kloss, it was sort of by accident.

After high school, Henry did construction work for a year, earning enough to enroll at the Massachusetts Institute of Technology.

"Had always been interested in mechanical things and just wanted to go to engineering school, headed in no particular direction," Kloss says.

Mostly he studied physics. But insufficient money forced him to drop out to work, mostly for housing contractors. He also had his own one-man business, handcrafting speaker cabinets. "One then learned how miserable the loudspeakers were, got some interest in the field," he says.

War was raging in Korea, and Kloss was drafted. Teaching electronics to GIs at Fort Monmouth, New Jersey, just a short train ride from Manhattan, proved a blessing; in the evenings he took courses at Columbia and New York University. And he became an enthusiastic theatergoer.

One evening an NYU instructor told the 22-year-old Kloss about his idea for a revolutionary new loudspeaker: Make the speaker box an integral part of the speaker's acoustical structure, not just a container. Start with a small, loosely suspended cone, one whose natural resonant frequency would normally be too low. Then use the air trapped in the

He waves at his desk apologetically. "They say this doesn't present a good image," he mumbles as if he doesn't see the point.



cabinet as part of the suspension system, raising the cone's resonant frequency in the process. The system should produce bass notes with quality as good as that expected of a larger conventional system.

"It was obvious—higher quality, much more compact," says Kloss. He immediately told the instructor, Ed Villchur, that they should build it. Villchur wanted one of the major companies to bring it out. But they turned him down cold. And so in 1954, out of the army and back in Cambridge, Henry Kloss, together with Ed Villchur and two friends who had \$5,000, started Acoustic Research. Experimenting with Villchur's idea, Kloss worked out a fixed proportion at low frequencies between the cabinet's volume and the loudspeaker's efficiency—a relation-

In contrast to the starkly clean manufacturing plant, Kloss's office is so cluttered the telephone is balanced on a stack of papers.

ship that is a crucial factor in modern speaker design.

In 1958 Kloss and two of the partners split from Acoustic Research to found KLH, aiming to refine the acoustic-suspension loudspeaker. They produced the first portable stereo with components-quality sound, the KLH Model Eleven. Then the partners sold their successful company to the Singer Company. Kloss stayed on, but he was increasingly dissatisfied. He felt there was little left to do in audio.

In 1967 Kloss left KLH to found Advent Corporation. He had decided that television needed a shot of technological vitamins. Why not see it big?

Why not have a theater in your living room? Henry Kloss loved theater, after all. Advent would make it happen.

Kloss funded his projection TV research by putting Advent in the audio business. The company produced high-quality, shelf-size speakers. And noticing that the time seemed right for hi-fi tape cassettes for home stereo play, Kloss designed the first cassette tape deck with Dolby noise-reduction circuitry. Then he pioneered the production of a new Du Pont invention, chromium dioxide tape that produced exceptionally good sound in the high-frequency range. By 1975 Advent's sales had topped \$16 million a year.

Meanwhile, Kloss was working hard on projection television, using an approach that had always worked well for him: noticing the need for a new product, ascertaining that the technology needed was already available, and adapting the technology to his own purposes. The idea for large-screen TV had surfaced in 1933. To Kloss, the fact that nothing had been done with it did not mean that nothing could be done. He had seen the audio industry pass up the chance to make excellent new equipment, shunning Ed Villchur's idea; he suspected that television's possibilities had not been exhausted either.

What most attracted him was projection television's efficiency. Like ordinary TV, it sweeps a patch of phosphor with a beam of electrons, making it glow to create an image. But the more area the beam sweeps, the more electricity it draws. And projection TV's phosphor patch, although intensely bright, is tiny. That means projection TV would produce more light with less power. And a key motivation for Henry Kloss is making efficient use of materials and processes. "Hate waste in any form," he says.

The only technology Kloss lacked was a reflective screen that would concentrate light, bouncing it back to viewers in a horizontal swath. From the ceiling or floor, such a screen would look dark, but who watches television from there? Designing the screen, however, proved baffling.

Reading *The Wall Street Journal* one

day, Kloss snapped to attention. An article mentioned that a Kodak engineer, noticing aluminum foil's reflective peculiarities in his kitchen one day, had decided that the material, modified, would make a good screen. It was just what Kloss needed. "Fortunately," he says, "one lucked out."

To project the image onto the screen, he used an optical mirror like those often used in telescopes. And for efficiency, he put the mirror inside the video tube itself. It worked beautifully. But the tube had more than 35 steel parts inside, each requiring careful alignment, and that made manufacturing complicated.

Advent went ahead with production, and before long the company's ledgers were bleeding red ink. Behind the loss was Kloss's conviction that he had to rush his TV design into mass production, ahead of phantom competitors he believed were nipping at his heels. He spent millions training workers for large-scale production of the TV sets. And planning for mass marketing, he lowered the sets' prices—too low to turn a profit at Advent's small production level. Income from the company's audio sales was insufficient to cover the expenses of the video division. In the second half of the 1974-75 fiscal year, Advent recorded a \$3 million loss.

Kloss believed the problem was just a temporary blip. But the bankers threw a tantrum, demanding the company hire a business expert. Enter Peter Sprague, a wealthy young man who specialized in turning around ailing companies. Sprague described Kloss as "an ingenious Yankee tinkerer"—but obviously no big businessman. Finally, in October 1976, forced out of the decision making by the newcomers, Advent's founder left the company.

Back in the basement of his Cambridge home, Kloss set up a laboratory, complete with glassworking equipment and a "clean room." He worked there incessantly, alone, a ticked-off wizard out to make a point. Projection TV, he was going to prove, could be manufactured efficiently and economically. All he needed to do was design a video tube that would be simple inside, a tube

Soon after Advent introduced the projection TV that Kloss designed, its ledgers were bleeding red ink.

without all the adjustable metal fittings of his original design.

One year later, Kloss emerged from his basement workshop with the Novatron tube. His solution was elegant. He made the projection mirror an integral part of the tube, its back. A glass cylinder connects the mirror to the tube's faceplate, and Kloss put a phosphor patch on the faceplate's inner surface. An electron beam shoots through the mirror at the back of the tube, traverses the evacuated cylinder, and paints an image on the phosphor patch. The image is reflected by the mirror through the faceplate to the screen, immensely enlarged.

Advantages? Few parts. And the matching curves of the mirror and faceplate make them easy to align, a manufacturer's dream.

The factory at Kloss Video that Kloss has equipped to produce his televisions is as unorthodox as the man himself. The main entrance of this strong young company, on a moderately seedy industrial sidestreet, is a door in a wall. Inside is a drab yellow warren of windowless cubicles, inhabited by earnest-looking men and women, mostly wearing blue jeans. Wires snake along the walls and ceilings. Boxes clutter hallways and offices. And everywhere Novatron tubes stand on their faceplates with electron guns sticking up, like cupcakes with a single candle.

Padding through all this in Wallabees, blinking distractedly, is the boss. He avoids his own cubicle, which is so heaped and piled and stacked (the telephone is balanced atop a leaning tower of paper) that he no longer uses it. He waves at all this apologetically, explain-

ing that the company has grown, is in transition, soon to be remodeled. "They say this doesn't present a good image," he mumbles, as if he doesn't really see the point.

But the manufacturing plant, which Kloss designed himself, is pure NASA. Here all is dairy white. Phalanxes of whirring automatons precisely grind out faceplates and mirrors. Assembled tubes ride a conveyor through a kiln, which automatically fuses them into finished Novatrons.

Henry Kloss is like his factory, contradictory, as if Wernher von Braun, Lee Iacocca, and one of Tolkien's hobbits had all crawled into the same body. For instance, this founder of corporations and father of industries claims to be a very lazy guy. "The companies weren't started because one had to have a place to put energy," he says. "You had to summon up some energy because that job was to be done, it ought to be done, it should be done."

What aspect of his work does he like best? "Don't enjoy any of it," he insists. "The most fun is just seeing it all going well and knowing there's nothing particular to worry about now."

Money, pleasant as it is, has never been his motivation. (The first major indulgence the income from his businesses has produced for him and his wife, Jacque, a Radcliffe astronomy graduate, is a 160-acre plot on Martha's Vineyard, where he plans to build a home. For now, the Klosses spend vacations there in a large tent.) What has driven him, he says, is not money but the urge to create new technologies so right for the times that other companies must follow suit, verifying the importance of the designs. For instance, when Kloss Video came along and he needed a high-quality small speaker for his sets, they were available. Why? "Because I taught the world to make them," he says, for once uttering the taboo personal pronoun.

But it is the business issue that most stirs up contradictions. The charge that Henry Kloss is no businessman still makes his teeth clench. Yet he has considerable disdain for the whole process: "What the hell is this idea that there's

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some magical thing called business?" he grumbles. Accounting is important, he acknowledges. But he points out that you can buy that skill by the hour. Otherwise, it's just decisions. Fire this guy? Rent this space? Kloss says, "The fundamental question is, do you make this product or not?"

Meanwhile, hidden in Kloss Video's innards is a small workshop, an out-of-the-way corner with a bench. It is the private laboratory of the company's

The concave screen on this projection TV required the viewer to sit at least eight feet away to see a sharp image. The most recent version projects the picture on a flat, white wall only four feet away.

chief executive officer. It is here that, as he puts it, "many hours are spent." He is refining the Novatron design, playing with the phosphor layer, adjusting the accuracy of the optics, rejigging the electron gun. Tinkering.

An odd activity for a corporation

chief, some might contend. He insists that his taking on this work is simply efficient. And who knows what might pop out of this workshop?

Contradiction can indeed pay off. In an industry producing mostly one-piece sets, he sticks to a separate projector and screen. With most screens shrinking to fit small rooms, he keeps his large—"They're sort of missing the fruity import of the whole thing," he muses. "The whole thing is size." And while most of the industry is in a brightness race (a race in which Kloss is thus far the winner), he has just brought out a new, screenless model, the NovaBeam Model Two, that projects onto any wall. It requires a slightly dimmed room, like a theater. But its cost is a relatively low \$2,200.

Why, then, is he so disgruntled with his reputation as an eccentric inventor? It makes the company seem a one-man show, he says, and a parochial one at that. In fact, he points out, the day-to-day operations are in the hands of highly skilled professionals who do not wear their hair in braids.

His own contribution? "Probably wanting to give away as much work as I can," he says.

But the wizard has his revenge. On a Kloss Video loading dock stand boxes of used Advent equipment, bought when the company recently dissolved. The business aces who took Advent over proved there is no special magic in an M.B.A. Meanwhile, Kloss Video has begun to turn a handsome profit.

Kloss is delighted by a recent article citing Polaroid's founder as "no businessman." "It's a consolation to see they say it about him too," he says. "So, finally, I give that one up—I'll make the products, I'll take the money, and I'll go down as a flaky, baggy-clothed inventor."

The future? Kloss says he operates simply by keeping alert, by always thinking, "What is important now?"

"And the answer," he says, "is probably cleaning up my office."

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