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Stanford isn't only a great university -- it's a great university right across the street from a pile of venture capital.

By Bill Richards, [August 2000 Issue](#)

Every school has its icons. Notre Dame has Knute Rockne; Harvard has JFK. And Stanford? "Do you know Jerry Yang?" asks Ali Hortacsu, an intense, dark-haired, 25-year-old graduate student. In 1994, two years after Hortacsu arrived at the Palo Alto campus as an undergraduate from Turkey, a friend sneaked him into the trailer off Panama Street where Yang and David Filo, both graduate students, were banging out the software for the search engine that became Yahoo. For Hortacsu, it was an awesome moment.

Hortacsu went on to get a bachelor's degree in electrical engineering, and he expects to finish up his doctorate in economics next year. Now he's trying to start an e-business of his own, with another Turkish student at the university. Yet for all he's done in eight years at Stanford, that time in the trailer where Yahoo was born lingers as an indelible memory.

"I touched Jerry Yang's computer," he says softly, his dark eyes shining at the recollection.

Ask almost anybody in Silicon Valley where to find ground zero of the Internet revolution, and they'll point toward the 285-foot-tall Hoover Tower looming over Stanford. Things tend to change fast here. ("Slow Is Not an Option," reads a favorite campus T-shirt.) The trailer off Panama Street is gone. It took the venture capitalists nearly a year to discover Yang and Filo; it certainly wouldn't take that long now. On any given day, venture capitalists swarm across the campus -- teaching, lecturing, advising, and doing deals with just about anybody with a business plan, which is just about everybody.

The VCs are here for several reasons. For one thing, a lot of them have offices a silver dollar's throw from campus on Sand Hill Road. For another, Sand Hill Road has the biggest pile of venture capital on earth, tens of billions of dollars in search of new ideas to fund. The most important reason is the fact that Stanford's students and faculty are bursting with e-business ideas, and that over the decades the school has had a phenomenal record of success in spawning significant companies. Faculty members have their own entrepreneurial efforts, and they can and do invest in students' startups.

Last year, the university licensed Stanford-developed technology to 24 startups, taking equity positions in 17 of them. It even jumped into the VC game itself recently, putting \$1 million into a Web-based medical-information startup called e-Skolar in return for a 60 percent stake. Like many universities, Stanford has invested a portion of its \$7.5 billion endowment in venture-capital funds, which had the best returns of any asset class in the endowment last year. However, Stanford also allows its faculty members to invest in VC "side funds," smaller funds usually reserved for favored clients, which is a far less common practice. Side (or sidecar) funds are sweet deals: VC firms generally don't charge them management fees. By contrast, a successful VC will charge clients in its main funds as much as 30 percent of their gains. Mohr Davidow Ventures, one of the Valley's most successful VCs, has at least a dozen Stanford faculty members and administrators in its side fund, which has returned anywhere from 4 to 40 times investors' cash in an average of seven years, says George Zachary, a partner in the firm.

What VCs get in return for letting professors invest in these side funds is an inside track on promising research. And that promising research, VCs hope, will ultimately turn into the Microsofts and Yahoos of tomorrow. (You didn't think VCs did this out of the kindness of their hearts, did you?) Hank Barry, a partner in Hummer Winblad Venture Partners, estimates that about 10 percent of the 5,000 business plans he and his partners review each year come out of Stanford -- "30 percent of the good ones," he says. Barry, who recently became the interim chief executive at Napster, says pointedly that the Stanford faculty members who get invited into side funds "are the people VCs think can help produce a return on the main fund."

With the sheer amount of money available, tremendous pressure on VCs to find the next big thing before somebody else does, and a gigantic pool of intellectual talent on the other side of the street, the VC enclave on Sand Hill Road has become a virtual adjunct of Stanford. Some might argue it's the other way around. Either way, therein lies a bit of a controversy. Depending on whom you ask, either Stanford represents the future of higher education and is a model for universities everywhere, or it's an example of an erosion of the

academic ideal of scholarship aloof from commerce. Some critics, especially at rival universities, suggest that Stanford has gotten too close to the entrepreneurial community. Stanford has opened up whole new realms for possible conflicts of interest, the argument goes. One worry is that a professor might, for instance, skew the research coming out of his lab toward his company's interest; another is that the professor might simply divert his students' research to his own company.

Other universities try to keep the lines between academics and business more sharply defined. Harvard, for example, doesn't invest in startups to which it licenses technology. It also prohibits its faculty members from investing in their students' startups or serving on their boards. Two years ago, says Dennis Thompson, a Harvard associate provost, nobody at the school would have seen any need for such rules. But times have changed. Last year, a poll of graduating Harvard B-school students showed that 343 of 880 graduates planned to start their own companies or become VCs and fund startups -- or already were doing one of the above. "You have to decide what your purpose in life is," says David Litster, vice president and dean for research at MIT, which takes a stance similar to Harvard's. "If you have to change the character of the university to get resources, my feeling is, don't go there."

Stanford says it keeps a close eye on any potential conflicts of interest. "We think we've played an important role in Silicon Valley," says Ann George, assistant dean of research. "The flip side of that is you have to preserve the university's independence and be able to do academic research unhindered by the economic community around us." She continues: "We occasionally hear from students who believe their faculty adviser is involved in an outside venture that might be a conflict. We review those at the highest levels. We have made some adjustments. We have [reassigned] research responsibilities, and some faculty members have taken sabbaticals or removed themselves from the university." In most cases, George says, simply reassigning faculty or students suffices. In any case, the prevailing notion at Stanford seems to be that recent developments are simply an adaptation to reality. "We're in Silicon Valley. Everyone's got a startup here," says Phyllis Gardner, a professor of molecular pharmacology and medicine and Stanford's senior associate dean for education and student affairs. "The purely academic researcher is no longer supreme. This is a whole new world order."

Perhaps the best place to watch Stanford's entrepreneurial mating game in action is at the annual E-Challenge competition, which is sort of a bake-off for students' business plans. Other schools hold comparable contests. Stanford got the idea from MIT and held its first in 1995. Similar competitions are now held annually on at least a dozen campuses from the University of Nebraska to Harvard. (Even VC firms, attempting to bypass the middleman, are holding contests. Hummer Winblad recently launched its first such event and tried to call it March Madness, but renamed it February Madness when the NCAA cried trademark infringement.)

At this year's Stanford contest finals, held in the Packard Electrical Engineering Building, seven judges sprawl around the conference table in room 312. Six are VCs. Also present is Christy Jones, a Stanford graduate and entrepreneur who helped start Trilogy Development Group as a student and now is chief operating officer of pcOrder.com, which she co-founded. The moderator is Tom Kosnik, who teaches entrepreneurship at Stanford's School of Engineering and, by his own count, has helped to launch more than 50 startups.

Stanford's judges this year winnowed down a field of 104 business plans, with the winner garnering a \$25,000 grand prize -- donated by a venture capitalist. But prize money isn't what this is about. At the judging, each of the seven finalists makes certain the VCs around the table know exactly how much they are looking for in first-round financing. Hortacsu -- the man who touched Jerry Yang's computer -- and his partner, a 22-year-old undergraduate named Murat Goksel, have the most modest requirements: They'd settle for \$1.5 million to \$2 million to start LiquidMana, an Internet consultancy for people who make their livings buying and selling on Internet auction sites like eBay. Goksel says he got the name from an online dictionary, and that *mana* means a type of magical power; the idea is to make markets more liquid, magically. "We want to be the Bloomberg of the emerging market," says Goksel, who has pitched his plan several times already to VC firms in the Valley. During the E-Challenge semifinals in April, one VC judge slipped the LiquidMana entrepreneurs a note. It said, "I'd love to mentor you guys."

The most substantial funding -- \$12 million to \$15 million -- is being sought by MedCycle.com, which was started by three young Stanford doctors-in-training and a relative who's a lawyer specializing in startups. Their PowerPoint presentation describes the company as "the first to provide an integrated system and marketplace for the delivery and management of post-hospital health care." Two of the doctors have just come off 36-hour residency stints and look a bit wobbly during the pitch. But the third, Dan Greenwald, a fourth-year Stanford medical school student, tells the judges that in six months they plan to roll out an online database that will smooth the transition for patients from the hospital to aftercare. The doctors-in-training don't mention it to the judges, but all of them have agreed they'll put off finishing their medical studies if MedCycle gets funded.

By midafternoon, nearly everyone around the table is getting bored. So far, there has been a pitch for a company that delivers snapshots to wedding guests, and another that reroutes long-haul trucks -- both over the Internet. There's been the team from Wacky Wombat, a marketing firm that gathers information from kids online. Still to come is Claimation, which deals in car wrecks, using the Internet to match auto insurers with car repair shops. Two of the VCs are sneaking looks at their pagers; another is doodling in his notebook.

Then the team from T-RAM arrives, and the VCs snap to attention.

The idea of E-Challenge isn't to put the judges to sleep, of course. It's to jolt them awake with the sort of sky's-the-limit business plan that will keep them revved up for months. That doesn't happen often, but it does now and then, thanks in part to the university's aggressive entrepreneurial bent. (The roster of companies started by Stanford faculty and students reads like a high-tech Who's Who -- Yahoo, of course, and also Cisco, Hewlett-Packard, Silicon Graphics, and Sun Microsystems, to name the most prominent examples.)

And -- who knows -- a birth-of-a-juggernaut moment could just be happening now. The T-RAM guys think they can add to Stanford's lineage. Homan Igehy, 27, and Farid Nemati, 29, are graduate engineering students from Iran. Last summer the two of them fell into a discussion about Nemati's doctoral work on a problem that has bedeviled chip engineers for years -- how to get more speed out of a

memory chip without increasing its size. Igehy, a computer science student who had dabbled in several abortive startup ideas, recalls thinking, "Oh, my God, this is it." They formed their company to push T-RAM last fall.

And today, they are the hottest team at the E-Challenge finals. Antennae go up all around the judges' table as the two start their presentation. Igehy and Nemati announce they plan to market a memory chip that Nemati invented that is both faster and smaller than any memory chip available today. Faster memory chips mean faster computers, faster Web servers, faster networks, faster *everything*. "Nobody believed Farid could do it," Igehy says of his partner's invention. Nemati's co-patentee on the chip is his faculty adviser, James Plummer, who also happens to be dean of Stanford's engineering school.

The judges are rapt as the students describe their chip's potential market -- \$148 billion. The pagers are forgotten. Nobody rolls their eyes when Nemati declares, "This is going to change the world." No one looks pained when he says T-RAM needs \$8 million to get going. The judges are so entranced that the toughest question they can muster is "What's the worst thing you can think of about T-RAM?" Nemati confesses that he can't think of a single bad thing about T-RAM. The judges break into applause as the students leave.

T-RAM is the kind of technology that Sand Hill Road dreams about -- a real product, with a mind-boggling potential market and some heavyweight backing from Stanford's engineering faculty. (The T in T-RAM stands for thyristor, a semiconductor device that speeds up the chip's memory.) "I'm sure they won't lack for company in the next few months," Gary Morgenthaler, one of the judges, says dryly after the students finish their pitch. At the awards banquet that evening, where T-RAM is announced as the judges' unanimous winner, Morgenthaler turns up with Igehy and Nemati in tow and spends most of the evening in earnest discussion with the students.

Nemati says he has run computer simulations that show that the physics behind the chip concept is sound. With Plummer's advice, he built a laboratory prototype of T-RAM that worked, and they've done several small but successful production runs on the chip in Stanford's chip-fabrication facility. Nemati and Plummer have applied for a joint patent on the new chip design. Nemati says T-RAM has asked Plummer, who was named dean of Stanford's engineering school last fall, to put about four hours a week into the venture. "He has said, 'I'll do whatever you like' to make it succeed," Nemati says.

At some schools, that might be an odd thing for a professor to say. But the rules are evolving. The whole question of academic participation in startups is a murky one, mainly because it's so new. There hasn't been anything to compare with today's climate at Stanford and in Silicon Valley. "There's a lot more emphasis on getting involved with startups these days," says James Severson, president of the Association of University Technology Managers, who says that many universities are revising their conflict-of-interest rules. "You can't anticipate every situation that will develop," he says. "As the number of entrepreneurial activities grows, it should be expected we'll see more of these conflicts, and there will be more complexity to them."

The pickup of interest in the area is reflected in Severson's group, which is made up of university officials who handle the licensing of technology developed on campuses -- and, as such, are usually the ones who deal with entrepreneurs. He says membership has doubled in the last five years. It now includes some 250 U.S. universities, plus others overseas. And, he says, "each university ends up deciding for itself what the appropriate limits are."

At Stanford, the limits get pretty complex, as the case of the T-RAM team's faculty adviser suggests. That Plummer could wear so many hats at once -- dean, adviser, co-patentee, and potential beneficiary -- would raise conflict-of-interest questions at some schools, but so far not at Stanford. Plummer is also an investor in a VC side fund but says his participation is "only a small portion" of his overall investment portfolio. To date, he says, he has had only one conversation with a VC about the T-RAM chip, and that was about technical engineering matters. Besides, he says, the chip still has a long way to go to reach a commercial level. "If I do end up playing any role in this new venture," Plummer says, "it will likely be only as an adviser." If that happens, he adds, he plans to file a conflict-of-interest statement with Stanford, leaving it up to the university's provost to decide what level of involvement would be allowed.

Stanford officials insist that collaborative ventures like the T-RAM chip are common at other research-oriented schools, such as MIT and Harvard. What's different, Plummer says, is the scale of Stanford's collaboration -- which reflects its proximity to Silicon Valley. It's what Dennis Thompson of Harvard calls Stanford's "environment of opportunity."

Given the venue, the criticism of Stanford by other universities is all very low-key, of course, but it does exist. Consider what underlies a recent conflict-of-interest decision at Harvard, which has been enviously eyeing Stanford's cozy give-and-take with Silicon Valley for years. In 1997, Harvard Business School opened a West Coast outpost, the California Research Center, where visiting B-school faculty members can shed their tweeds and mingle with Silicon Valley shakers. The center is located, of course, on Sand Hill Road. In recent months, Harvard seemed to be moving toward easing some of its conflict-of-interest rules. But in May, Harvard Medical School surprised many in the academic community by proposing even tougher rules for its faculty. Under the new rules, for instance, faculty advisers would have to get written permission and inform their students when they have a financial interest in the research emanating from their labs. Harvard Business School hasn't yet proposed new rules of its own. However, it faces many of the same issues as the medical school, which is involved in such commercially hot areas as biotech research.

Stanford's name never appeared in Harvard's announcement, but one of the factors behind it, Harvard officials and others say, was a letter to the review committee from Warren Zapol, a senior professor at Harvard Medical School. Zapol outlined his son David's alleged experience while working on his doctorate at Stanford Medical School. David's laboratory work, the letter said, was "siphoned off" to Rigel Pharmaceuticals, a South San Francisco biotech startup founded by Garry Nolan, an assistant professor of molecular pharmacology at Stanford and David's faculty adviser. David Zapol quit Stanford in 1997, in part over the conflict. A year later, he says, he raised the issue with a Stanford dean, who acknowledged that it was suspicious but declined to pursue it. "I realized this was just the way it was at Stanford," says David Zapol, who now heads his own startup, a San Francisco Internet company called Metazoa. A second student who

also left Nolan's lab after the incident confirms Zapol's account.

Nolan, who is 39, denies misappropriating research for his startup. "I did my honest best to make sure this was all kept aboveboard," he says. "It is absolutely incorrect to say that anything was siphoned off." When he received venture capital funding to start Rigel in 1995, Nolan says, Stanford's deans gave the company permission to transfer some data from his lab for six months. "These things are very difficult," Nolan concedes. "I went to the deans and said, 'Please guide me, I don't want to get into trouble.'" The line between Stanford's entrepreneurial ventures and academics needs to be continually clarified, he says.

Stanford officials say they rely on annual financial and conflict-of-interest statements required from all faculty members to spot potential conflicts. In David Zapol's case, there wasn't enough proof to challenge a respected teacher and entrepreneur, the officials say. Stanford doesn't have rules prohibiting faculty from taking research cash from companies they own. However, the university's Office of Technology Licensing, which handled the licensing agreement with Rigel, says there was no agreement for a blanket transfer of data from Nolan's lab to Rigel, although Rigel was licensed to use some biotech data from the lab. Stanford says it hasn't made any money yet from its licensing agreement with Rigel.

The irony is that David Zapol's complaint created more of a stir at Harvard than at Stanford. But Stanford is running on Internet time now. And with VCs chasing hot business plans the way sports agents chase quick linebackers at Florida State, there isn't much time available for introspection. Two years ago, when Jessica DiLullo Herrin and Jenny Lefcourt took the suggestion of a judge from Kleiner Perkins and dropped out of E-Challenge -- and out of Stanford Business School -- to launch their online wedding registry, "we were rare birds," DiLullo Herrin says. "Now, everybody's thinking about it."

When DiLullo Herrin went back to Palo Alto recently to speak at a lecture in the campus's endless How-I-Did-It entrepreneurship series, she was a little surprised that the students coming up afterward to slip her their business cards and business-plan summaries were undergraduates. Perhaps she shouldn't have been. If you are in D.C., you talk about politics. In L.A., you talk movie scripts. In Palo Alto, you talk about your business plan. At Stanford, DiLullo Herrin says, what has changed is the expectations. No doubt, Jerry Yang would understand.

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