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[Right now] is the largest personal opportunity for entrepreneurs in the history of civilization.

JAMES CANTON
CEO, Institute for Global Futures

[FEATURES]

76 NEXT-GEN INNOVATORS Forward-thinking entrepreneurs are making strides in promising areas. Will any of them build the next Microsoft?
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Next-Gen INNOVATORS

BY MARK HENRICKS

Forward-thinking entrepreneurs are making strides in promising areas—from nanotech to biotech to semiconductors. Will any of them build the next Microsoft?

Scott Rickert wants to make countless homes energy-efficient—and even self-cleaning—with his nanotechnology films. Linda Pinney hopes to sell her automated prescription-pickup kiosks to the nation's 40,000 big-chain pharmacies. Heng Liu's prospects are even more ambitious—Liu wants to, as one of his investors puts it, “replace all the bulbs in all the offices in the world” with his light-emitting semiconductors.

Whether one of these entrepreneurs' companies becomes the next Microsoft, Dell or Google, there's little doubt they operate in some of the most promising fields. Pinney, 44, founded Asteres Inc., a San Diego company in the red-hot medi-cal devices space. Rickert, 52, has Cleveland-based, multimillion-dollar Nanofilm Ltd. poised to exploit one of business's most talked-about areas. Liu, 46, has patents on technology that could save billions in energy costs every year.

Those are just a few of the sectors and companies that are producing the next generation of technology innovators. Biotechnology, space, security, media and entertainment, and software (including internet companies) are also



Renaissance machine: Linda Pinney's secure, accurate, prescription-dispensing kiosks could have uses in other industries, too.

PHOTO © FRANK ROGOZIENSKI



steaming. Says futurist James Canton, CEO of San Francisco's Institute for Global Futures, "[Right now] is the largest personal opportunity for entrepreneurs in the history of civilization."

While entrepreneurs pour sweat into the opportunities, VCs talk with dollars. According to the "MoneyTree Report" from PricewaterhouseCoopers and the National Venture Capital Association, based on data from Thomson Financial, software ventures snagged more than \$1.22 billion, or nearly 22 percent, of the \$5.6 billion in first-quarter 2006 venture investments. Biotech got 14 percent, or \$808 million; medical devices 12 percent, or \$690 million; telecommunications almost 11 percent, or \$601 million; and semiconductors 8 percent, or \$447 million.

Money alone won't make the next eBay, but venture money sniffs out likely candidates and, by funding new technologies, makes entrepreneurial superstardom possible. "The reason they call it venture capital is because they are willing to take the risks to develop new technologies that really do change the nature of things," says Tracy T. Lefteroff, global managing partner of private equity and venture capital for PricewaterhouseCoopers.

ALTERNATIVE ENERGY BURNS BRIGHTLY . . .

Andrew Perlman has succeeded with startups in telecommunications, semiconductors and biotechnology. But the 31-year-old Cambridge, Massachusetts, entrepreneur may see his greatest opportunity in alternative energy. Greatpoint Energy, the 25-person company he founded in January 2005, uses a proprietary process to inexpensively convert coal into clean-burning methane gas.

"From an entrepreneurial standpoint, there's huge potential," Perlman says, noting that the United States has more coal than any country, and that coal is about one-thirtieth the price of oil. Coal gasification is one of many opportunities in alternative energy, which includes solar, fuel cells, geothermal, wind, waves, tides, biofuels and energy management systems.

Venture capitalists put \$173.9 million into alternative energy in 2005, according to PricewaterhouseCoopers, up from \$103 million in 2004 and \$36.4 million in 2003. Alternative energy also boasted the world's biggest offering of 2005: the \$400 million IPO of China-based Suntech Power Holdings Co. Ltd. That kind of money excites both investors and entrepreneurs.

"Everything in energy has really boomed," says Craig Cuddeback, senior vice president of Cleantech Capital Group, a member organization in Brighton, Michigan. "There's enough money going into it to make it worthwhile."

Still, alternative energy boasts little truly paradigm-busting technology. Coal gasification has existed for decades, as have solar energy, ethanol and other major technologies. So far, no one has a revolutionary approach that improves on older methods enough to produce a clear winner in any alternative energy area. Perlman must deal with an expanding roster of competitors while persuading investors to finance a gasification plant that may cost several hundred million dollars—and may not generate nearly the returns VCs demand. But he's confident it's worth it: "There aren't too many opportunities on the planet that have bigger potential."

NANO DOMINI?

Innovators tend to be category-busters, so the next Bill Gates may well run a business that does not fit a current paradigm. Take nanotechnology: PricewaterhouseCoopers' venture capital survey doesn't separate businesses engaged in building objects on a scale of 100 billionths of a meter or less into their own classification because they work in many different industries. But overall, these enterprises received about \$237 million in venture funding in the first quarter of 2006.

Rickert started Nanofilm in 1985 and says building small is finally poised to hit the big time, thanks largely to support from Washington, DC. "It's fundamentally the industrial policy of the U.S. now to support and encourage nanotech," he says. "That is a major shift. There hasn't been an industrial policy of the U.S. since the space race." Among other things, it means approximately \$1 billion a year of federal money goes to nanotech R&D. That has encouraged many local and state governments to start their own nanotech economic development efforts, and nearly all major universities have significant nanotech research efforts underway.

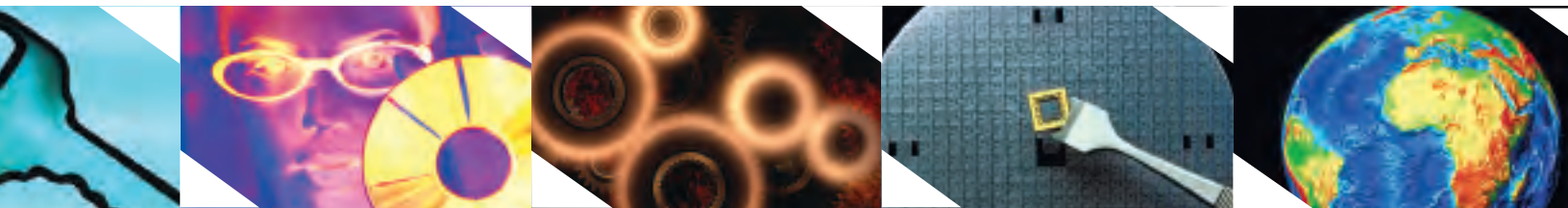
Rickert's company and most others in nanotech focus on films rather than the miniature machines extolled by sci-fi writers. Automakers are big buyers, he says, using films to make windshields that don't need wipers and mirrors that never fog. Eventually, he forecasts that homes' surfaces will be rendered dirt-repellent with nanotechnology. "The house should basically clean itself and maintain its own energy needs," he says. "That's a dream, but we have a product in mind that will help that dream come true."

Hundreds of nano-enabled products are already here, says Scott Irwin, general partner with El Dorado Ventures, a Menlo Park, California, venture firm with nano-tech investments. Semiconductors, solar cells, batteries and clothing are a few everyday nanotech items. Says Irwin, "It's going to happen more quickly than most people realize, and it's going to be a big market."

MEDICAL MACHINES

While getting a new drug approved may take many years and several hundred million dollars, approval of a new medical device can be accomplished in as little as 18 months for correspondingly less money, says Canton. Yet many medical devices address the same vast and rapidly expanding demand for human health products as pharmaceuticals. "These are going to be huge markets, and they're perfect for entrepreneurs," Canton says.

Pinney conceived her company's automated kiosk while in line at a pharmacy. She knew from working for a pharmacy equipment company that no existing self-service kiosk had the security and flexibility to dispense several hundred unique prescriptions accurately enough to satisfy regulators. Assembling a team of engineers, she eventually solved the fiendish



problem—"The word 'insane' was not used infrequently," she says—and has trials underway at several major pharmacy chains. Asteres' highly flexible, secure vending machines may ultimately be found in a wide variety of places such as computer plants, where they could dispense costly microprocessors.

She believes that because of the difficulty of creating such a secure vending machine and the tight intellectual property protection in place, her company may be able to grow with little competition. "It'll be everywhere," Pinney says of the Asteres machine. "It'll be a standard."

CHIP CHECK

Semiconductor entrepreneurs probably face a future of gradual innovation rather than revolutionary change. Consider BridgeLux, the Sunnyvale, California, company Liu founded in 2002 after working for several companies developing light-emitting diodes, or LEDs. These have long been used in indicator lights on automobile dashboards and elsewhere, and have more recently found their way into liquid crystal displays, reading lights and architectural lighting. Many of BridgeLux's chips go into camera-phone flashes.

LEDs use between one-tenth and one-third the energy of incandescent bulbs, making them attractive to businesses, consumers and government policymakers. They also last up to 10 years. And many people like the quality of the light emitted by LEDs as well as or better than incandescent and fluorescent lights.

As costs come down and LED efficiency rises, many business opportunities open for entrepreneurs with the right technology. "Everywhere there's an incandescent or fluorescent bulb," predicts Irwin, an early BridgeLux investor, "they'll be replaced by LEDs."

B2B 2.0, MOBILE MESSAGING AND BIOTECH

The top category for venture capital last year, software, includes investments in internet companies building businesses around Web 2.0, an approach relying largely on communities of users to build and provide information. "The beauty of a lot of these Web 2.0 models is [that] the customer base is creating a ton of value," says David Gardner, co-founder of Alexandria, Virginia-based The Motley Fool, an investment advisory service company. "And the company can be small and nimble as it creates a platform for [the customer base]."

Internet appeal is evident in the rich exits recently made by companies such as Skype, the internet telephony company eBay bought last year for \$2.6 billion, and MySpace, the online community startup sold to News Corp. for \$580 million. But Leteroff feels many of the most promising internet opportunities may lie outside the consumer space. "The internet has been a growth engine of products and services to the consumer, mainly," he says. "I don't think it's taken off

on [B2B] applications like everybody thought it would a long time ago."

When it comes to telecommunications, the action is in wireless hardware. "It's all the mobile devices," Leteroff says. "The [hardware] is where all the content [is] being delivered." Companies such as Cisco Systems, which grew from startup to goliath during the internet run-up, are being surpassed by innovators bringing broadband communications to highly portable devices. "The cycle repeats itself," Leteroff says, "as the behemoths get out-hustled by the new generation of companies."

Nowhere have behemoths been more surprised than in biotechnology, where startups employing innovative technologies have produced new drugs and treatments that beat anything big pharmaceutical companies can offer. This is the beginning of biotech's real boom time, says Charly Travers, biotech analyst for The Motley Fool. "It's been a maturation over the past 25 years," says Travers. "The industry has come of age, and the decades of research and development are paying off."

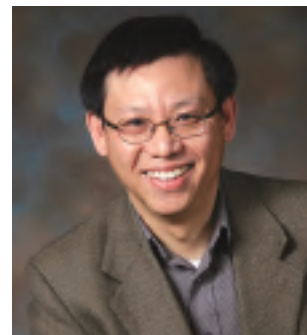
The most promising biotech firms develop innovative treatments. "They've gone about drug development differently than the major pharmaceutical companies, using protein or cell-based [treatments] as opposed to traditional drugs," says Travers. "That allows them to develop something different."

VENTURE ADVENTURES

During the first internet boom, investors and entrepreneurs poured billions of dollars and countless hours into internet startups that generated nothing but losses for founders and investors. Their picks could be wrong this time, too. Visionaries who look at more than dollar flow see space travel, data security and even clean water as being equally likely to spawn the next generation of tech innovators.

And don't count out media and entertainment, which came in just behind semiconductors with \$396 million in VC investments in the first quarter of 2006. Hesham Fouad, founder and president of VRsonic Inc., believes his Arlington, Virginia, company's spatial audio technology for making uncannily realistic audio sources could revolutionize sounds in theaters and classrooms. "Our mission is to reinvent the role that audio plays in entertainment and training," says Fouad, whose primary customer is the federal government. "We see VRsonic growing considerably in the next five to 10 years, and our technology becoming the new Dolby or Surround Sound for a number of applications." Sounds promising. ■

MARK HENRICKS is Entrepreneur's "Staff Smarts" columnist.



Future's so bright: Heng Liu's LED bulbs are lighting the way to long-lasting, energy-efficient illumination.