



## OPTICS INNOVATIONS

# Read to SUCCEED

Four Business Publications Recommended by **Milton Chang**

I began reading several business publications when I was in graduate school in the 1960s. I had a hard time understanding them at first, but it became progressively easier, and over time, they gave me valuable insight into that world.

Whether you plan to start a company or not, I believe that every engineer can benefit from knowing something about business and management. You'll have a better sense of how technology fits into real-world enterprises; become more effective on the job; learn how to interact with management; and lead people and projects, even when you make engineering decisions.

Moreover, as a practical matter, it is almost impossible to maintain an edge in a 40-year career as a pure technologist. Learning about business and

management enables engineers to move into managerial positions and to remain vital and productive. It gives a technical person the opportunity to oversee projects that follow a product's development from the idea stage to market application. Moreover, anyone who does want to start a business will embark on the process with less fear of the unknown and avoid fatal mistakes from the start.

Reading business magazines and newspapers is a good way to begin learning about the business world. There are four publications on my can't-miss reading list: *Bloomberg Businessweek*, *Forbes*, *Fortune* and *The Wall Street Journal*. While some of these periodicals overlap in content, each one offers a different emphasis and perspective.

Learning about business and management enables engineers to move into managerial positions and to remain vital and productive.

Contents: Why Japan Missed Southeast Asia? It's not China... | Cheaper electricity in Brazil comes at a cost... | India's new broadband... | The week ahead... | Interview: What if you were a... | Photo: © iStockphoto.com/Chris Dreyer

## Global Economics

### The Sting of Long-Term Unemployment

► Economists haven't figured out why so many Americans have been jobless more than six months

► "We have an unemployment crisis and only a debt problem"

Michelle Hall, 44, hasn't worked since last June, when funding ran out for her administrative job at Peaceful Acres Horser, a sanctuary in Pattersonville, KY. She applies for jobs online and usually hears nothing. "It's a feeling of what I call resignation," she says. "I have a lot of skills that are very applicable across the board, from the clerk to middle management."

Hall is the face of a new problem that remains poorly understood: chronic, long-term unemployment that continues even as job growth resumes across the economy. The rate of short-term unemployment six months or less is almost back to normal. In January it was 4.9 percent of the labor force. That's only 0.7 percentage point above its 2007 average. But the rate of long-term unemployment, 3 percent in January, is precisely triple its 2007 average, according to a Bloomberg Businessweek calculation based on Bureau of Labor Statistics data. (Those two rates...

4.9 percent and 3 percent add up to the overall unemployment rate of 7.9 percent.) A striking statistic: The long-term unemployed make up 38 percent of all workers without jobs, double the average share and just a few notches down from the 2003 peak of 45 percent.

Economists are puzzling over what has changed. Is it generous benefits that make it easy to stay unemployed? Or erosion of skills that render people unemployed? Or discrimination by employers? Peter Diamond, an economist at Massachusetts Institute of Technology who received a Nobel prize for his work on labor markets, says that regardless of the causes of long-term unemployment, the harm it causes justifies strong efforts to stimulate the economy, or even the long-term jobs are abandoned. Other public policy problems, he says, take second place. "We have an unemployment crisis and only a debt problem," Diamond says.

One way to visualize this issue is to compare U.S. unemployment with job openings since 2001. The result can be seen on the next page: a scorpion-shaped curve that tracks the swelling ranks of the long-term jobless. The chart's creators were Rand Ghazal, a Ph.D. candidate in economics at Northeastern University, and his adviser, labor economist William Dickens. Their work was part of a report they wrote that was published last year by the Federal Reserve Bank of Boston. It was so striking that the Boston Fed named Ghazal a visiting fellow.

Ghazal and Dickens show unemployment only for people out of work more than six months. The chart depicts a consistent pattern until the summer of 2009: job openings became scarce, and unemployment rose. After that, more jobs began to open up, but long-term unemployment lags behind. The long-term jobless rate has fallen a bit over the past year but is still far higher than...

Contents: Mobile apps for bigger screens... | For Web browsers, it's either or... | Interview: What if you were a... | Photo: © iStockphoto.com/Chris Dreyer

## Technology

### Hacked? Who Ya Gonna Call?

► Mandiant is the go-to responder for cyber-response attacks

► "It's a reputational thing. They play well with law enforcement"

The brand new operations center of cybersecurity firm Mandiant is deeply tranquil. Rooms in the third-floor office, overlooking a lagoon in Redwood City, Calif., are playfully named after locations on the startup's Enterprise from Star Trek, including a kitchen called *Forward*.

In one large central control room, dubbed the Bridge, a dozen security analysts peer quietly at their computer monitors, looking for anomalous activity on the computer networks of Mandiant's hundreds of corporate clients around the world. A large computer display on the wall shows an image of the earth, seen from space, that highlights in-bound and out-bound network activity in each country. Mandiant monitors the entire planet, yet a printout taped to the desk of one analyst suggests that these days, the company has a more specific focus. "To accuse the Chinese military of launching cyberattacks without solid proof is unprecedented and baseless," reads an excerpt from a recent Chinese government statement. Jennifer Ayers, who manages the Redwood City facility, removes the printout and folds it in half. "We're not supposed to rebroadcast," she says.

Last week, a succession of news stories disclosed that the computer systems of major U.S. organizations including the New York Times, Wall Street Journal and Washington Post had been breached by hackers with connections to the Chinese government. Unsuccessful attempts were made to infiltrate the computers of Bloomberg LP, which owns Bloomberg Businessweek, as well, says Ty Tzippe, a company spokesman. The breaches are apparently trying to stifle dissent by reaching across the ocean to expose the anonymous sources of Western journalists who have...

written negative stories about the country or its government. After detecting the breaches, papers including the Times and Post contacted Mandiant, a 9-year-old Alexandria (Va.) based company with a reputation among industry insiders for technical proficiency and large ego. It also has a budding business on the front lines of U.S. companies' intensifying war with international cyberespionage.

In a wave of cyberattacks beginning in 2008, dubbed Operation Aurora by security firm McAfee, sophisticated hackers based in China breached the corporate networks of Google, Yahoo!, Juniper Networks, Adobe Systems, and dozens of other prominent technology companies and tried to access their source code. China's hackers seemed narrowly focused on military technology and telecommunications companies as early as 2000. They were seen as a way to portend intellectual property and narrow the marketplace for U.S. goods.

China's hackers have been implicated in cyberattacks. Now China, it appears to be much broader. Wiley Iritin, a prominent Washington law firm working on a trade case against China, was hit in 2010; the White House was hit last year. Last month, hackers breached the website of the Council on Foreign Relations. Mandiant says it delivered malware to anyone who visited its website.

Hacking groups have also aggressively targeted Western oil and gas companies. Mandiant and other law firms and investment...

## Bloomberg Businessweek (formerly Business Week)

If you only subscribe to one business magazine, this should be it. I like the section on "Global Economics," which offers useful background information that helps drive decision-making in industry. I also like the "Technology" department, which keeps me abreast of what's new with a wide range of products and businesses beyond optics and photonics.

## Forbes

This magazine zooms in on the business strategies of specific companies. The "Technology" section highlights interesting new products and innovative ideas. "Entrepreneurs" covers the process that entrepreneurs go through to start companies and explores how they deal with the challenges they encounter along the way. "Investing" provides valuable information that guides how to make wise investment choices.

ENTREPRENEURS  
GLOBETROTTERS

### Calling China

After Nokia canned them and their open source mobile platform, a group of engineers decided to relaunch and looked East. Good luck.

BY FARMY OLSON



"We have a bright idea and we're focused on it." — Jolla cofounder and CEO Marc Dillon.

Faded is no longer the suicide capital of the world—it last that distinction in 2007. So why would a handful of ex-Nokia engineers decide to get into the maddening smartphone business, taking on Google's Android platform, Apple and Samsung? Answer: China.

Later this year their company, Jolla (pronounced "YO"), it means "strongly" in Finnish), will introduce Sailfish, an open source platform for the Chinese mobile market. Will anyone notice its claims of being faster and easier to use than Android, Windows Phone 8 or Apple's iOS—the three runs Android apps without much modification? Samsung, Mozilla and Canonical are also launching open source platforms to shake Android's 75% share of the global market.

More dauntingly, Jolla is focused on China, where nine out of ten smartphones on an Google platform. Jolla cofounder and CEO Marc Dillon claims that many of China's mobile users are sick of Android. "Standing out is really important in Chinese culture," he says. Last June...

he struck a distribution deal with DPhone, the nation's largest mobile phone retailer, with 2,000 stores, to sell Jolla's first model this summer. ST-Ericsson is making the processors for the phone, and Jolla tapped into its network to find a local handsetmaker.

Jolla now does R&D in Hong Kong, where local and Chinese chipset vendors, handset and component makers, and retailers are part of an alliance. The partners are kicking in \$770 million to get Sailfish phones in the hands of Chinese consumers. While Sailfish is an open source system, Jolla also plans to make money via licensing deals and selling its expertise to install the platform on locally made handsets.

Jolla's phone will likely target the premium \$500-to-\$800-per-handset segment for a sliver of China's predicted 500 million smartphone users by year-end. There were 74 million in 2008, says Digital Strategy Consulting. Jolla and its partners aim to sell "a few million devices" in the first 12 months, says its chairman, Antti Saarnio. We estimate: Jolla could break even on just 200,000 devices, not including licensing fees to ODMs.

While Apple has struggled to negotiate a covered partnership with China (which is the country's biggest carrier with 700 million subscribers), Saarnio says Jolla's networks give it an edge. Local vendors resent the colossus from Cupertino, which extracts 80% of all profits from the globe (read: mostly Asian) supply chain for smartphones, reports C. Lawrence analyst Mark Newman. And cheaper, local manufacturers like ZTE and Huawei are launching powerful phones to challenge Samsung and Nokia.

This year could bring a brutal price war. Apple may launch a cheaper iPhone in emerging markets, says Jolla. It's also eyeing the handsetmakers from scaling Sailfish's open source platform and installing it on their devices. Another way Jolla could get on the scrap heap with other failed mobile platforms.

But Jolla already sees the bottom of the scrap heap. Sailfish is a revamped version of the software platform Maemo, which Nokia dropped in 2011 before laying off Dillon and his team. He got the band together again and raised \$15.5 million from financial, government loans and venture capitalists. They're a mix of investors, Saarnio claims, and plan to raise "significantly" more this year. "We have a straight line, and we're focused on it," Dillon says—asserting his destiny right into the equal. ☐

TECHNOLOGY  
RENEWABLE ENERGY



Mosaic cofounders Billy Parikh and David Rosen are offering better-than-CD rates if you want to wager on solar.

### Own a Piece Of the Sun

A new "crowdfunding" website called Mosaic lets you play green investment banker.

BY TOBY WOOD

Dillon hold your breath, but the U.S. Securities & Exchange Commission could finalize regulations this year to implement the JOBS Act, the 2012 law that lets startups raise funds directly from non- and pop investors. Mosaic isn't writing. The two-year-old Oakland, Calif. firm already has approval in California and New York to allow individuals to invest directly via its website. The twist is that the investments are loans, not equity, and the money goes (for now) only to new solar power developments. In the past, ordinary investors have been shut out of the solar boom, as most projects obtain equity or debt financing from banks and corporations, which rarely are so eager to lend for solar capital. "Anything that introduces new sources of cost-effective capital is val-

able," says Royal Pizzani, a former BP executive who is now chairman and managing partner of Energy Finance Company in Manhattan Beach, Calif. In late December he raised \$350,000 from accredited investors through Mosaic's website for a 470-kilowatt photovoltaic array that his company installed on a New Jersey convention center. He says he's saving 200 to 300 basis points over banks with Mosaic.

Even not particularly green-minded investors might be tempted by Mosaic's returns of 4.5% to 6.5%, well above CD rates. Residential solar projects tend to have default rates as low as 0.2%. "One of the fastest ways to build the clean energy economy is to allow more people to benefit from it," says Billy Parikh. Mosaic's 33-year-old cofounder and president.

Similar to peer-to-peer financing site LendingClub, Mosaic puts the burden on investors to assess the risks in project prospectuses. If they like a deal, they can get in for as little as \$25. No money is transferred if a deal isn't fully financed. The developer pays back the loan with interest from income generated by the sale of electricity to its customers. Mosaic takes 100 basis points of the interest rate (along with an origination fee and annual platform fee) and passes the rest to investors.

Mosaic is far too small to scare any investment banks, but it can get deals done quickly. Within the first 24 hours after launch in its inaugural offering, Mosaic's new website raised more than \$300,000, including \$227,000 for three loans for solar arrays on three affordable-housing complexes that offered returns of 4.5%. Mosaic has now raised a total of \$1.1 million for all projects. Parikh says profitability is "within sight."

Anthony Sim, a solar analyst with research firm Bloomberg New Energy Finance, questions whether Mosaic can attract a big enough pipeline of investors to fund large solar projects. "For now, I think it's a relatively niche product for solar arrays on three affordable-housing complexes that offered returns of 4.5%. Mosaic has now raised a total of \$1.1 million for all projects. Parikh says profitability is "within sight."

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## Fortune

Fortune gets into more specifics about successful, high-profile individuals. What do these people do and how do they live? I always find an interesting scoop in the “Scandals” section. It describes ill-gotten wealth and serves as a good reminder that we cannot always believe what we encounter.

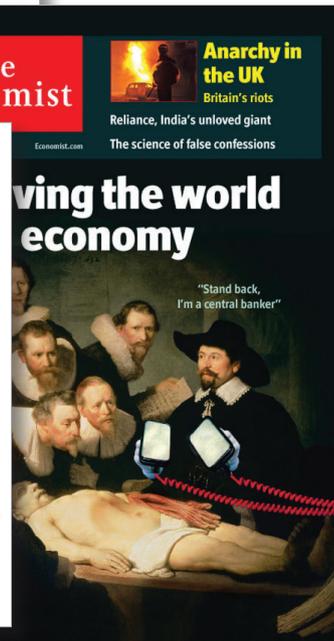
## The Wall Street Journal

Published six days a week, this is a great day-to-day resource that provides up-to-date information about what’s going on in business. It is a must-read for anyone who wants to optimize their investment in anything—whether it is in the stock market or real estate.

## Other gems

Through reading, you can open yourself up to a vast array of career options—and simply broaden your perspective on life. With that in mind, I also recommend reading a local newspaper every day and following the *Economist* to learn more about the rest of the world.

And, of course, I wish more people would read my book, *Toward Entrepreneurship, Establishing a Successful Technology Business*. It is an easy read, and it covers much of what you’ll learn in an MBA program, but it is customized for the individuals in our industry.



Yes, you are successful because you were focused enough to become an expert in your field. Broadening a bit to strike a balance can help you to accomplish even more. Reading these publications is a painless way to start! **OPN**

Milton Chang (miltonchang@incubic.com) is the managing director of Incubic Management and an OSA Fellow. He was president of Newport and New Focus, and he took both companies public. He is the director of mBio Diagnostics and Aurion. He is a trustee of Caltech and a member of the SEC Advisory Committee on Small and Emerging Companies.