GILDER
TECHNOLOGY
REPORT

July 2005 / Vol. X No. 7

Surf and Turf

The key to success is the discovery of entrepreneurial singularities that have yet to be manifested in the quarterly numbers & stock movements scrutinized by technicians. We succeeded with Qualcomm, Equinix, Broadcom, National Semiconductor, Xilinx & Essex.

Returning last month from a foxy, friendly, and informative Forbes Investment cruise through the Baltic Sea—where I split my time between the market gurus, the "Forbes on Fox" fabulations, and information theory math—I found myself pondering the relevance of information theory for markets.

Largely invented by Claude Shannon at MIT and Bell Labs, information theory began by gauging the capacity of a communications channel to carry information in the face of noise. This apparently simple problem impelled Shannon and his followers to grapple with the difficult and elusive matter of defining information itself. The conclusion, roughly torn from its mathematical matrix, is that information is measured by its "news" content, its "surprisal," defined in the theory as its "entropy."

Information is unexpected bits. Why do you care? It is at the heart of markets and making money. Entropy is the source of profit. The predictable returns are already incorporated in the price, which in the end will settle to the risk-adjusted return on capital, the interest rate. Around here, we are interested in getting "ten-baggers"—the huge entropic surprises of wealth creation. Capitalism is an information system based on creative surprises.

On the boat, I espoused my "hollowing out of Cisco" thesis, and touted **EZchip** (LNOP), up 25 percent since the cruise. I also celebrated **NetLogic** (NETL), a maker of network processors with 16 design wins from **Cisco** (CSCO) and soon to soar upward some 50 percent on estimates of future earnings.

I offered many putatively deep thoughts on the innovations of **Qualcomm** (QCOM), **Altera** (ALTR), **Broadwing** (BWNG), **Cepheid** (CPHD), **Affymetrix** (AFFY), **Microvision** (MVIS), and **Synaptics** (SYNA), each of which offers unique technologies that should eventually reward investors. As my best bet for early appreciation, I pointed to Synaptics, which had recently lost 50 percent of its value on the basis of murky rumors that **Apple** (AAPL) would replace some Synaptics touchpads on various lines of notebooks and iPods. Not only is Synaptics technology now appearing on advanced cell phones and other teleputers but it also continues to provide inputs for Apple. I also pored through the reports of fellow presenter Josh Wolfe of the *Forbes/Wolfe Nanotech Report* on such nano plays as **Veeco** (VECO), **FEI Company** (FEIC), **Harris & Harris** (TINY), and **NVE Corp.** (NVEC), with mixed conclusions which I debated with Josh in a popular session under the mischievous moderator Rich Karlgaard, publisher of *Forbes*.

Wolfe is manifestly an ascendant star of stage and screen and nanotech investment and we had an enjoyable debate on the boat. We chiefly diverged on NVEC, a "nanotech" company which claims to have contrived a new non-volatile memory chip based on electron spin. However, NVEC's "spintronics" merely repeats on chips the giant magneto resistance (GMR) technologies prevalent for eight years on hard drives. I doubted the depth and durability of their intellectual property and believe that the company is unlikely to outperform the some fifteen other compa-

nies with innovations in dense non-volatile memory technology. On the cruise, I mentioned such alternatives as **Kleiner Perkins** and **Draper Jurvetson** favorite **ZettaCore**, which offers a "macromolecular" memory, **Matrix Semiconductor** with its 3D capability, **IBM** (IBM) with its touted terabyte "millipede," **FRAM** with its ferroelectric RAM, and **Ovonics** with its amorphous semiconductor device preferred by Nick Tredennick.

Learning about all these companies, their technologies, and related physics and chemistry and keeping up with their financial and competitive vicissitudes is hard work. Yet the technical analysts on the boat took the position that it was all a waste of time. For stock market investments, the technical gurus favored index funds. **Vanguard** founder John Bogle was not present on the cruise, but he could have mailed in his idea that the best way to play the market is to buy some proxy for the entire caboodle. His recent book bears endorsements from New York Attorney General Eliot Spitzer and former SEC Chairman Arthur Levitt, so Bogle's view is popular with the constabulary.

Synaptics technology is now appearing on advanced cell phones and also continues to provide inputs for Apple.

On the cruise, the prosperous Ralph Bloch of **Raymond James and Associates** (RJF) and James Stack of **InvesTech Research** made a powerful case that the best and most objective guidance to the future movement of the markets comes from the market itself. Watch the movements of securities prices and interpret their significance. Computers can do most of the work. These prices reflect all the information available in the market and all the decisions to buy and sell. By contrast to this copious spread of objective scientific data, the reports of company execs and analysts are full of bias, subjectivity, and self-interest.

Only rarely does anyone point out that without fundamentals—without close and necessarily subjective scrutiny of the actual performance and potential of each company—markets would contain virtually no information at all. Bogle's index funds would be mere tickets for a lottery in which the payoff would grow more slowly because of sub-optimal allocation of capital. In a random world, with stocks on a "random walk," luck would dominate skill and capitalism would have no advantage over socialism. Like casino gamblers, aging human bodies, and the entropic universe itself, markets in the end would fall to the inexorable law of gambler's ruin. Hey, that's not good for the Telecosm list.

My studies in information theory, though, reaffirmed my conviction that an economy is nothing like a casino or a lottery. Nor is it chiefly a physical or material system doomed to decline or stagnation. It is an arena of information. But information is not all it is. It is also an arena of creativity and invention. Creativity always comes as a surprise to us. If it didn't we would not need it and socialism would work. Creativity is a domain of entrepreneurial singularities that cannot be reduced to numbers.

The key to success in the stock market is the discovery of entrepreneurial singularities that have yet to be manifested in the quarterly numbers and stock movements scrutinized by technicians. We succeeded with Qualcomm, **Equinix** (EQIX), **Broadcom** (BRCM), **National Semiconductor** (NSM), **Xilinx** (XLNX) and **Essex** (KEYW), among others. Time will tell whether we will achieve comparable wins with EZchip, NetLogic, Microvision, **Power-One** (PWER), Cepheid, Broadwing, and Synaptics. One thing is clear: technical signals and quarterly earnings reports had virtually nothing to do with any of these choices.

Fundamental analysts attempt to abate the noise in the market by subduing it with knowledge. With uncertainty reduced to a minimal level, the truly surprising and informative events will be readily identifiable. Accumulating information and transforming it into knowledge, fundamentalists make the news leap out from the noise.

By contrast, technical analysts study the noise, the toss and turn of valuations across the market. Within the noise, they find undulating patterns: comely regularities and curvaceous symmetries. A popular school of analysis celebrates the market as a fractal, evincing the fashionable swirls and whorls and "strange attractors" of chaos theory. In the last year, Benoit Mandelbrot has published *The Misbehavior of Markets* and Philip Ball *Critical Mass* to show that the laws of fractals and physics capture the deep reality of markets.

What does information theory tell us about such ideas? Stanford University's Thomas Cover, the leading information theorist of the day, put Mandelbrot's set—the colorful whorls of intricate design and apparent complexity of Mandelbrot's fractal—on the jacket of his canonical book *Elements of Information Theory.* Graphic artists often use the Mandelbrot set as the epitome of dense information.

But information theory itself is full of surprises. Inside the jacket of his book, Cover writes, "The information content of the fractal on the cover is essentially *zero*." Nada. Another word for information content is complexity, which is measured by the number of lines in the computer code needed to produce the effect. The product of a simple computer algorithm, Mandelbrot's fractal bears virtually no content at all according to this measure of information theory. It is all froth on a core of simple algebra.

In his superb 2005 book, *A Different Universe*, Nobel Laureate physicist Robert Laughlin of Stanford describes such studies of froth as "baubles" and "supremely unimportant." It is like analyzing water by focusing on the bubbles as it boils, a phase-change phenomenon still not understood

and full of chaotic enigmas that have little to do with the intrinsic properties of water. Such frothy data epitomizes spurious science. It focuses on trivial patterns yielding small or chaotic effects that are divorced from the actual substance of causes and consequences.

Markets are living things fraught with all the complexity and information of life. As manifestations of the interplay of human minds, markets are analogous to biological phenomena. Although the analogy is not exact, it conveys a deep truth. The controlling information of economics and biology both reside deep inside the nuclei of cells and companies.

In biology, this order of things is termed the "Central Dogma," as framed by Nobel Laureate Francis Crick who with James Watson first defined the structure of DNA. Because there are 64 DNA codons and an alphabet of only 20 amino acids, biological information has to flow from the more potent information source (the DNA with its 64 possible symbols) to the less potent one (the amino acid proteins with just 20 elements).

The Central Dogma ordains that DNA comes first and programs the proteins. The content is entirely separate from the conduit. That is why DNA could carry the genetic information of all the living creatures that have ever existed or presumably will exist. That is why Raymond Kurzweil in his amazing new book, *The Singularity is Near*, can contend that the onrushing exponential advance of technology during this century will enable the downloading of an entire human mind, perhaps himself, into a different substrate or memory. Moving from carbon-based incarnation to silicon-based storage, that new person will still be consciously, emergently himself.

At the Telecosm Conference on September 26, the "singularity" will come to the Resort at Squaw Creek, in Lake Tahoe. There Kurzweil will give an inscribed copy of his tome to all comers and launch our minds on a fantastic voyage beyond the current event horizons in nanotech, biotech, and communications and computer science. Suggestive in its prophetic sweep of Alvin Toffler's visionary *The Third Wave* of thirty years ago, but far more sophisticated in its technological mastery, Kurzweil's book offers a highly speculative but richly informative roadmap for the next fifty years of ten-baggers galore.

Thrilled with the insight that the genome bears the plenipotentiary secrets of life, many biologists imagine that it sums up the meaning of life as well. But the ultimate meaning of the DNA is found in all the richness of the free creations of human beings, which cannot be reduced to the DNA itself. As Kurzweil shows, human intelligence and creativity are the most powerful and redemptive forces in the universe and they are irreducible to anything else. Meaning springs from the singularities of narrative, not merely from the sequences of nucleotides. You cannot predict the future of human minds and institutions such as markets or companies by examining the fractal patterns of their previous price movements or the substance of their genomes. You have to know your stuff—science, software, technology—as Kurzweil manifestly does.

The contrary temptation has persisted throughout history. People have relentlessly tried to read the mind of God or the destiny of men and nations and companies in patterns in the proteins or in the sands and the stars. But you cannot fathom human behavior by contemplating the shape of people's heads (phrenology) or reading the lines on their hands (palmistry) or examining the constellations at the moment of their birth (astrology). Similarly, you cannot predict future movements of markets by weighing the current patterns of stock prices. There simply is not enough information in current prices to reveal future prices.

Kurzweil will give an inscribed copy of *The Singularity* to all Telecosm comers & launch our minds on a fantastic voyage beyond the current horizons in nanotech, biotech & computer science.

Outsiders doing technical analysis can occasionally be effective, particularly when guided and seasoned by an intuitive or stealthy mastery of fundamentals. But technical analysis is essentially parasitic. It is *outside* information. For its validity, it depends upon the fundamental judgments of insiders and the insights of knowledgeable analysts who appraise not merely the DNA of companies but also their histories, their management, their financial data, and their technological endowments.

Rebelling against these facts of life and capitalism, the government fosters an "outsider trading scandal." The law for information disclosure by public companies and aspirant public companies prohibits the release of materially significant news unless it is published simultaneously to the world. This well-meaning rule is supposed to create a "level playing field" where no investors have the advantage of inside knowledge. But a level playing field means no information, which is defined as a deformation of the level. Information, like life, is disequilibrium. What the SEC accomplishes is to reduce the amount of real information in stock prices and stultify investment knowledge by diminishing it to mere numbers.

Similarly, the "rules-based accounting" of Sarbanes-Oxley represents a concerted effort to reduce knowledge to information and information to the detailed observance of the rules. Because the rules contain much less information and complexity than the companies do, the rules cannot convey the reality of the company's performance. As Craig Barrett of Intel editorialized in the *Wall*

TELECOSM TECHNOLOGIES

Advanced Micro Devices	(AMD)
Agilent	(A)
Altera	(ALTR)
Analog Devices	(ADI)
Broadcom	(BRCM)
Broadwing	(BWNG)
Cepheid	(CPHD)
Corning	(GLW)
Equinix	(EQIX)
Essex	(KEYW)
EZchip	(LNOP)
Flextronics	(FLEX)
Intel	(INTC)
JDS Uniphase	(JDSU)
Microvision	(MVIS)
National Semiconductor	(NSM)
NetLogic	(NETL)
Power-One	(PWER)
Qualcomm	(QCOM)
Semiconductor Manufacturing International	(SMI)
SK Telecom	(SKM)
Sprint	(FON)
Synaptics	(SYNA)
Taiwan Semiconductor	(TSM)
Texas Instruments	(TXN)
Wind River Systems	(WIND)
Xilinx	(XLNX)
Zoran	(ZRAN)

Note: The Telecosm Technologies list featured in the Gilder Technology Report is not a model portfolio. It is a list of technologies that lead in their respective application. Companies appear on this list based on technical leadership, without consideration of current share price or investment timing. The presence of a company on the list is not a recommendation to buy shares at the current price. George Gilder and Gilder Technology Report staff may hold positions in some or all of the stocks listed.

Agilent (A)

PARADIGM PLAY: MICROCOSMIC OPTICS,CDMA POWER AMPS

JULY 15: 25.66; 52-WEEK RANGE: 19.51 - 26.45; MARKET CAP: 12.61B

In a bid to buttress its sagging semiconductor unit, Agilent moved much of the manufacturing to lower-cost Asia where 5,000 of the units 6,800 employees now work, sold its camera module manufacturing business to Flextronics in February, acquired Wavics, a fabless Korean-based designer of power amplifier modules for mobile handsets, and opened a mobile marketing and development center in Seoul to support its ascendant Asian customers. Well, scrap it all. Insiders report that recently crowned CEO William Sullivan has stuck a For Sale sign into the division.

A rational outsider has reason to hope that Sullivan knows what he's doing. Before replacing retiring CEO Ned Barnholt in March, he was the general manager of the chip products group as well as Agilent's chief operating officer. Maybe Sullivan just got sick of chips. With the division would go Agilent's role as a leading supplier of CDMA duplexers and amplifiers along with a quarter of total sales … and the unit's putrid profits. Last quarter, chip operating margin fell sequentially to 2.9% from 3.9%, increasing its drag on the company-wide margin of 6.1%.

A semiconductor sale would increase Agilent's focus on test and measurement, which last quarter contributed to 44% of total sales and a whopping 70% of operating profits. Sans semi, the unit captures 59% of sales and 79% of profits. Strong in the April quarter were demand for wireless test oscilloscopes and logic analyzers, helping to offset weakness in defense and aerospace. Meanwhile, performance of the automated test group improved markedly as sales rose 17% sequentially to 11% of total revenues while operating loss was cut by a third. Still losing $20m a quarter, this division will further optimize costs by consolidating flash memory and SOC test operations.

Rounding out the company is the life sciences and chemical analysis unit at 20% of sales and 38% of operating margin, boosted last quarter by pharmaceuticals, forensics, chemical and petrochemical, and government. After purchasing Computational Biology in January with an eye toward expanding its genetic research, Agilent in May announced its intention to buy Scientific Software, which sells chromatography data systems, enterprise content management, and business process management software to the chemical, food, health care, and pharmaceutical industries as well as government. Chromatography is the process used to separate a mixture for analysis, and the purchase would give Agilent one of the largest chromatographic data systems and one of the broadest portfolios of laboratory-data software in the life science and chemical industries.

Agilent's buoyant balance sheet continues to improve as operations generated $205m in cash last quarter, exceeding capital outlays by $163m. Management projects operational EPS for fiscal 2005 (ending October) of $1.02, essentially flat with 2004's EPS of $1.05. Based on that forecast, the stock trades at a forward PE of 25. - CB

Altera (ALTR)

PARADIGM PLAY:SOFTENING HARDWARE, HARDENING SOFTWARE

JULY 15: 21.94; 52-WEEK RANGE: 17.50 - 24.26; MARKET CAP: 8.15B

Altera upped its June quarter revenue forecast to the high end of its prior guidance of a 4% to 5% increase. This follows 10% sequential growth in the March quarter, driven by a 16% surge in sales of the newest products, including the high-end Stratix II and low-end Cyclone II families of field programmable gate arrays (FPGAs). These new products continue to lead the charge. Most notably, Stratix II sales had already surpassed March quarter results by the end of May; sales of Stratix II more than doubled sequentially in March. Introduced last year as the first high-density, 90-nanometer FPGA, Stratix II includes Altera's adaptive logic modules. In the battle for the gold in the programmable logic market, Altera continues to gain on its larger rival Xilinx, which reaffirmed its June revenue guidance of flat to up 4% (see page 6). In a more paradigmatic strategy, Altera is pursuing a high-volume general-purpose path, while Xilinx is tending to add more custom features to its chips, thus proliferating parts and diffusing talent, energy, and manufacturing costs across more products. Despite healthier margins, inventory, and growth, at $21.94 Altera trades at a slight discount to rival Xilinx, with a forward PE (through June) of 33.2. - CB

Analog Devices (ADI)

PARADIGM PLAY: ANALOG EVERYWHERE & SOFTENING RADIOS

JULY 15: 40.45; 52-WEEK RANGE: 31.36 - 42.39; MARKET CAP: 14.97B

A veteran independent device manufacturer of 40 years with a meaningful share of the world's analog design talent, ADI is one of the three leaders, along with Linear and Maxim, in high-performance analog semiconductors. ADI's revenue from analog products increased 6% sequentially in the April quarter and totaled 81% of sales or $489m, compared to Linear's $291m and Maxim's $400m. Overall, the quarter was driven by growth in instrumentation, automotive, and automatic test equipment. ADI remains an industry leader in converters, where revenue grew 12%, and amplifiers, where revenue grew 10%. Sales of other analog products, including power management, declined.

On the digital side, at 19% of sales, ADI has become Texas Instruments' strongest competitor in

MEAD'S ANALOG REVOLUTION

NATIONAL SEMICONDUCTOR (NSM)
SYNAPTICS (SYNA)
SONIC INNOVATIONS (SNCI)
FOVEON
IMPINJ
AUDIENCE INC.
DIGITALPERSONA

COMPANIES TO WATCH

ADAPTIX
AMEDIA (AANI.OB)
ATHEROS
ATI TECHNOLGOIES (ATYT)
BLUEARC
COX (COX)
ENDWAVE (ENWV)
FIBERXON
LINEAR (LLTC)
LUMERA (LMRA)
ISILON
LENOVO
MEMORYLOGIX
NOVELLUS (NVLS)
POWERWAVE (PWAV)
SAMSUNG
SEMITOOL (SMTL)
SIRF
SOMA NETWORKS
STRETCH INC.
SYNOPSYS (SNPS)
TEKNOVUS
TENSILICA
VIA TECHNOLOGIES
XAN3D

digital signal processors (DSPs), ahead of Agere and Freescale. In April, ADI increased its market share in digital cameras and advanced digital TVs. But overall DSP sales fell 4% due to weakness in broadband products and wireless handsets, where ADI continues to struggle against TI and Qualcomm.

ADI is financially healthy and investor friendly. Cash and equivalents of $2.6b dwarf current liabilities of $536m, and the company holds no long-term debt. In the three quarters since announcing its share repurchase program, ADI has generated $474m in cash from operations while spending only $84m on capital and returning $489m to shareholders through dividends and share repurchases, reducing outstanding shares by 3%. In May, ADI raised its cash dividend to $0.10/share from $0.06 and increased its share repurchase program by $500m. Shares are trading at a forward PE for fiscal 2005 (ending in October) of 32.4 based on management's outlook. - CB

Broadcom (BRCM)

PARADIGM PLAY: LEADING FABLESS BROADBAND DESIGNS

JULY 15: 38.40; 52-WEEK RANGE: 25.25 - 39.45; MARKET CAP: 12.77B

Chips are flying, with Broadcom doing most of the chopping. In May, Broadcom sued rival Qualcomm for infringement on 10 patents related to wired and wireless communications and multimedia processing technologies. It also requested an investigation, which the ITC launched last month, into claims that Qualcomm has been unfairly importing products that infringe on Broadcom patents, including baseband processor chips and chipsets, transmitter/receiver chips, power control chips, and products containing these items, including cell phones. Broadcom wants to permanently bar imports of those products. Finally, this month, Broadcom filed a domestic antitrust suit against Qualcomm, saying it charges discriminatory CDMA royalties in blatant disregard of industry standards and that it commits exclusionary behavior. Altruistic Broadcom claims it is trying to prevent high prices on upcoming 3G phones.

This is a big mistake by Broadcom, which emerged from the recent downturn with record cash and securities and a basketful of enticing broadband technologies. (See the May *GTR*.) Broadcom should be moving forward by capitalizing on these strengths rather than looking back and picking a fight with the world's most profitable technology company in an attempt to get into the 3G game. Litigation is expensive and distracting, and Qualcomm, at twice the size of Broadcom, is no stranger to the tactic, having itself sued formidable foes such as TI and Maxim. For its part, Qualcomm has filed a counter suit involving 7 patents covering GSM and Wi-Fi. - CB

EZchip (LNOP)

PARADIGM PLAY: A GENERATION AHEAD IN NETWORK PROCESSORS

JULY 15: 7.87; 52-WEEK RANGE: 4.77 - 15.17; MARKET CAP: 156M

In the first phase of its long-term plan to acquire 100% ownership of EZchip, LanOptics last month increased its stake in the net processor startup from 53.4% to 58.7% by acquiring 3.6m EZchip shares from certain investors in exchange for 1.0m newly issued LanOptics shares. The transaction increased LanOptics's shares outstanding from 10.6m to 11.6m, the same ratio as its increase in EZ ownership. Thus, the economic interest of LanOptics shareholders remains unchanged despite the dilution of shares. For instance, at the current price of $7.87 per share, 10.6m shares of LanOptics with a 53.4% stake in EZchip yields a market cap for EZchip of about $156m, as does 11.6m shares at 58.7% ownership.

Earlier this month, LanOptics increased its ownership in EZchip yet further to 60.4% by participating in a funding round in which EZ raised an additional $10m. In a show of support, all of EZ's current investors participated in the round, with LanOptics contributing $6.9m in return for its additional 1.7% stake.

According to LanOptics, unifying shareholders of both companies through its full ownership of EZchip would simplify corporate structure and business operations and might result in greater benefits to shareholders over the long-term. While simplified operations are to be commended and encouraged, shareholders will soar only if EZ's innovative and unique 7-layer net processors take off. Eli Fructer's processor plane has been fueling for years with dozens of design wins. Crammed aboard, seatbelts buckled and stuck in a thinly traded stock, stockholders anxiously await the runway ride and revenue ramp as the clock ticks and competitor craft gather in line. For a shot at the stratosphere, Eli needs to get clearance within the year or begin to sway in the turbulent wakes of rival takeoffs. - CB

Intel (INTC)

PARADIGM PLAY: MICROPROCESSOR KING MOVES ONTO NETWORK

JULY 15: 28.30; 52-WEEK RANGE: 19.64 - 28.13; MARKET CAP: 174.7B

Driven by strong demand for notebook products, Intel revised upward its second quarter revenue forecast, from $8.6b-$9.2b to $9.1b-$9.3b. The company still cannot keep up with the demand for notebook microprocessors and chipsets, though it appears to be catching up. Also heading north are gross margin expectations, from 56% to 57%, as newer processes gain stride and 65 nm startup costs shrink along with transistor size.

Apple's migration of its Mac computer line from chips supplied by IBM and Freescale to Intel microprocessors is scheduled to begin by June 2006, with the entire line transferred to Intel by the end of 2007. Last year, Apple captured only 2% of total PC shipments, a sales level that would make it one of Intel's smallest customers among major PC makers at less than half a percent of total revenues. However, Apple recently reported that its Mac sales are growing at 3x the market rate for PCs. And Intel could add to its Apple revenues by selling the computer maker devices for wireless Internet connections and other PC and laptop related chips.

Still, market trends and competition with AMD will be more important to Intel than Apple will be. One market opportunity is the growing popularity of laptops. Intel has made chips for mobile devices one of its key focuses, and that's what drew Apple CEO Steve Jobs to Intel in the first place. Jobs claims that Intel chips will give Apple superior computing power at low power consumption—a critical combination for battery-powered mobile devices such as laptops. Apple has reportedly been frustrated in its attempts to create a laptop using IBM's G5 microprocessor by IBM because of the chip's excessive heat. - CB

National Semiconductor (NSM)

PARADIGM PLAY: ANALOG LEADER AND IMAGER PIONEER

JULY 15: 24.55; 52-WEEK RANGE: 11.85 - 24.48; MARKET CAP: 8.57B

National continues to ascend with the analog paradigm as the fab exits the recent downturn with flying colors. Sales of $1.9b for fiscal year 2005 ending in May were down only 3.5% from the previous year, while free cash flow increased by two-thirds to $432m, long-term net cash doubled to $740m, and EPS increased 18% to a penny or two under a dollar after correcting for one-time items such as a write-off of goodwill, acquisitions and sales of business units, and restructuring. Over the past six months, gross margin has risen from 50.6% to 54.7%. The rising returns reflect CEO Brian Halla's strategy to focus National's resources on its core analog portfolio. Orders for key analog products—power management, amplifiers, interface and data conversion—grew 19% sequentially last quarter, significantly higher than the company's overall bookings growth of 12%. Analog sales are now approaching three-quarters of company-wide revenues.

Halla pledges to continue his drive toward higher margin analog products. In May, Winbond Electronics of Taiwan bought National's Advanced PC division with its digital and mixed-signal IP, and the sale of the cordless phone unit is expected to follow in June. In March, Halla put National's Singapore test and assembly facility on sale, but with no buyer, a shutdown was announced this month, resulting in a $28.5m charge in the current quarter. The facility specializes in complex, high pin-count (digital) products. A newly opened test and assembly plant in Suzhou,

China, supports National's analog businesses along with a facility in Malaysia. The Singapore shutdown will save National about $20m annually.

On June 8, the day of National's quarterly report, investors bumped the stock up 9% to $21.69. With the fab's growth story still intact and more upside surprises lurking, the backward looking fiscal 2005 PE of 25.1 (based on the recent price of $24.55) appears modest. - CB

NetLogic (NETL)

PARADIGM PLAY: CUSTOM LAYER 3 AND 4 PROCESSOR

JULY 15: 19.20; 52-WEEK RANGE: 5.92 - 19.75; MARKET CAP: 340.8M

In the March *GTR* we opined that NetLogic was ripe for upside surprises based on a slew of design wins for its custom layer 3 and 4 net processors that will complement the packet shufflers from Intel and EZchip. Sweetening NetLogic's prospects was the introduction of a low-cost version of its knowledge-based CAM3 technology. The first surprise struck swiftly—a 43% sequential revenue increase in the first quarter. The boost likely came from substantial one-time orders from Cisco, which increased its share of NetLogic's revenue to 84% from 75% the previous quarter, as detailed in the May *GTR*.

Skeptics will be tempted to smooth NetLogic's ascent by slicing off the Cisco surge from last quarter when estimating forward earnings. However, we argue that with NetLogic's net processor technology lead, more upside surprises should not surprise you.

Apparently, some investors are catching on to *GTR*Logic, having driven share price up by 51% since our March report and by 70% since we put NETL on our list in January. Helping the price push are continuing good vibes from Cisco, the addition of the stock to the Russell 2000 Index, improving demand in enterprise networking, industry adoption of CAM3 technology, announced sampling of the second-generation knowledge processor, and 6 new production customers, bringing the total to 23 and easing fears that NetLogic's long-term lifeline hangs on Cisco.

We believe that NetLogic's near-term prospects remain bright and that a forward PE for 2005 of 29.5, which includes the earnings balloon of last quarter, isn't excessive for a fast growing tech leader that sports virtually no debt and that almost tripled its long-term net cash to $107m over the past year. - CB

Texas Instruments (TXN)

PARADIGM PLAY: PIONEER OF NEW PROCESSORS FOR TELEPUTERS

JULY 15: 30.76; 52-WEEK RANGE: 18.06 - 31.06; MARKET CAP: 51.13B

In an announcement sure to please bean counters and masters of minutiae, Texas Instruments tweaked upward its revenue guidance for this quarter by 1.9% to $3.18b from $3.12b. All three business units—semiconductors, sensors and controls, and educational products—are strengthening and the company believes that the inventory correction at its distributors has ended. Manufacturing utilization is also increasing, which should help nudge margins up. However, more important for TI and its investors than week-to-week tweaks and monthly play-by-plays is the future of wireless and advanced processes. Last quarter's 5.7% sequential sales decline came mostly from a 14% fall-off in wireless sales (which were still up 15% from a year earlier), and CEO Rich Templeton warned that the rate of growth in wireless products could continue to trend down in coming months. TI provides about two-thirds of the world's cell phone chips and is banking on further share gains this year. Also significant will be TI's advances in digital-power management where it will be looking to make inroads into Power-One's early lead. Planned capital expenditures for this year remain at $1.3b, well under operational cash flow, and will go primarily toward the cutting-edge 65 nm and 90-nm processes. - CB

Wind River (WIND)

PARADIGM PLAY: WINDOWLESS REAL-TIME OPERATING SYSTEMS

JULY 15: 16.83; 52-WEEK RANGE: 8.17 - 17.40; MARKET CAP: 1.41B

A leading vendor of real-time operating systems for embedded systems, Wind River has successfully reversed a three-year decline in which revenues tanked 53% and market share was lost to competitors such as Microsoft and Linux distributors. As part of its two-pronged revival strategy, the company last year began offering royalty-free licenses for its proprietary operating systems. Customers with low-margin, high-volume products are finding the higher initial fee more palatable than eternal royalty payments. Then, for its second prong, Wind River recently began supplementing its proprietary platforms, superior for complex devices, with Linux-based products good enough for simpler, low-end systems. According to CEO Ken Klein, the Linux pipeline is growing substantially and the company is doing well across the board.

During fiscal year 2005 (ending January), Wind River made its first profit in five years as revenue increased 16% over 2004 and EPS grew to $0.09 from a loss of $0.31 per share. Continuing its forward progress, Klein projects sales for fiscal 2006 to increase 14% and EPS to triple to $0.27. Leveraging its strengthening balance sheet, Wind River repurchased an additional $20m of convertible debt during the first quarter of fiscal 2006 after having repurchased half of the original $150m convertible in 2005. The day after the first-quarter call, the stock price jumped 27% and now trades at a forward PE of 62, reflecting investor confidence in Klein's optimism. Driving Wind River's growth over the coming decade will be the paradigmatic proliferation of real-time operating systems for embedded applications such as net processors and cell phones that must perform complex operations without discernible delays. - CB

Xilinx (XLNX)

PARADIGM PLAY: PIONEER OF PROGRAMMABLE LOGIC

JULY 15: 27.73; 52-WEEK RANGE: 25.21 - 33.39; MARKET CAP: 9.73B

Xilinx continues to stick to its revenue forecast of a flat to up 4% June quarter following 10% sequential growth in March. The historical average growth for Xilinx in the second quarter is 4%, and compared to rival Altera (see page 4), the company's June outlook remains modest. Xilinx competes with Altera in the rapidly expanding markets for programmable logic, which is used wherever fast adaptation to new demands is more desirable than the utmost in chip density and performance. Although Xilinx has traditionally commanded the kind of down-market edge that can disrupt the players above, its new hard-core embedded microprocessors will increase the specialization of its chips and may take it away from the inherent advantages of general-purpose programmable logic devices by emphasizing performance over adaptability. Despite more challenging margins, inventory, and growth, at $27.73 Xilinx trades at a slight premium to rival Altera, with a forward PE (through June) of 34.2. - CB

Street Journal, "Sarbanes-Oxley mandates that I submit financial reports that are not economically true, and then mandates that I affirm under criminal penalty that the reports are true." Rules-based accounting is like reporting a basketball game chiefly in terms of the fouls committed and the penalties imposed. As Bret Swanson reports, following a European trip, this pettifoggery of rules is driving foreign companies from American markets. The rest of the world is moving more deeply toward "principles based" accounting, which depends on knowledge more than on mere information.

Entrepreneurial information from deep inside companies, not from the CFO, the investment counsel, or PR firm, is the chief real knowledge in the economy. Acquiring and comprehending it is the chief work of inside entrepreneurs. Such knowledge is by no means self-evident; insiders often get it wrong. But nothing else is of much value at all. By excluding inside news from influencing the day-to-day movements of prices, the U.S. effectively blinds its stock markets, pushing the pullulating mass of data and news about technology companies into a few synthetic disclosure events, quarterly financial reports, and merger and acquisition announcements. Thus the government's control of information creates more binary moments of disclosure and more opportunities for inside trading. It makes mergers and acquisitions the decisive moments of value recognition.

With inside knowledge banished from public markets, capitalist privateers capture the wealth. The flow of capital gains bifurcates to the residual inside traders who still are legally and properly permitted to learn the intimate facts of the companies in which they invest. Huge winners are conglomerateurs such as Warren Buffett of **Berkshire Hathaway** and Jeffrey Immelt of **General Electric** (GE) and inspired venture capitalists such as Donald Valentine of Sequoia and John Doerr of Kleiner Perkins Caulfield and Byers.

GE and Berkshire Hathaway are not companies at all but portfolios of diverse assets. Their strength is full access to inside knowledge about their holdings and potential purchases. Similarly, venture capitalists command full intimate knowledge of their target firms. When **Google** (GOOG) went public at $87 per share, most of the returns went to venture partnerships such as Kleiner that bought the shares for 40 cents.

The irony is that when the company went "public," its information went private. As it plunged into the enforced secrecy of "fair disclosure" regulations, Google drastically reduced the flow of information to its shareholders. The public is left largely in the dark, learning little about their holdings outside of quarterly announcements, occasional press releases, and personality profiles in business magazines.

Such markets are vulnerable to outside information—the outside trading scandal. Mostly working in the dark, investors become paranoid and jump at every movement in the shadows. They contemplate technical charts and invest on the basis of "momentum," by definition ignorance. In their ignorance, investors become manic-depressive. They become prey to pundits and politicians who may know even less than they do, but who command the media.

For example, on May 26, during a spurious trade tussle with China, the Secretary of the Treasury of the United States, one John Snow, chose to expound his economic wisdom in a prominent article on the op-ed page of the *Wall Street Journal*. As the former railroad executive saw it, the world economic system faced a dire crisis of "imbalance." In his little thousand-word essay, he used the word "imbalance," inflected with rhetorical frowns, no fewer than twelve times.

The irony is that when Google went "public," its information went private.

By paying this almost liturgical tribute to the virtues of equilibrium in international economics, Snow invoked the single most pervasive fallacy in the minds of investors and their guides and gurus: the idea that economies should be numerically "balanced" at their borders. Following from this insight is the notion that imbalances must be rectified. If they persist, they portend a catastrophic "Day of Reckoning," as Benjamin Friedman of Harvard put it in a famous text.

The basic imbalance in the global economy is that U.S. companies collectively command close to half of the market capitalization of the world's publicly traded corporations and that the U.S. produces close to 30 percent of global gross domestic product (GDP) with just 5 percent of the world's population. Growing since the early 1980s, these skews of wealth and growth favoring the U.S. understandably evoke envy and distress among many of the suave continental equilibrists at Davos. But only Snow knows why they should concern U.S. investors, or why we should blame China for its immensely fruitful tie to the dollar that creates a dollar zone in which both countries flourish.

The imbalances concern U.S. investors chiefly because artificial crises mean more government intervention in global markets by ignorant politicians who think the Chinese are manipulating their currency price by tying it to the dollar. With a trade balance one of the most unlikely possible configurations of capital and goods movements, concern about a trade gap means constant government intervention in the global economy and lower stock prices everywhere.

With market prices moving by multiples on the basis of political noise from the likes of Snow, investors spend most

of their time in a hair-trigger trance. When the Fed makes a mistake on interest rates or the government makes another blunder on broadband policy or immigration rules or tax rates, the markets overreact. Volatility is an effect of the very ignorance that the new information tools are designed to overcome. With an *omerta* on the companies themselves and paralysis of insiders around them, the markets fill up with misinformation, momentum, and so-called "technical" twaddle about the market itself.

In mid-July of 2005 analysts discounted Power-One's assertion that it had twenty customers for its key product. In fact, they estimated the correct number was forty customers, but CEO Steve Goldman could not divulge such new information until it was thoroughly vetted by the company lawyers for unveiling to the world. By that time, the number will in all likelihood have changed again.

New companies are emerging with powerful ways of obtaining & revealing the crucial troves of inside knowledge that determine the destiny of companies.

The essence of SEC rules is "don't invest in anything you know about." The chief message of many state governments is invest in the state lottery, "where no one knows more than you do." The safest stock market investment is an index fund that bears no information at all. Executives at companies avoid insider rules by putting their own purchases and sales of stock on an automated program. This may protect the executives from litigation, but it also protects the public from the information that insider activity might otherwise impart. Prices contain less information, making the market a more perilous arena.

As Richard Vigilante and Andy Redleaf of Whitebox Strategies put it in their forthcoming book, *Minds and Markets*: "No doubt the Commission would prefer this to be a market of perfect information (which is impossible). But since they can't do that, they are creating a market of scarce information, in which the job of resolving uncertainty contains a much greater share of luck than of judgment. It's the replacement of judgment with guessing, entrepreneurship with luck, that is the general problem of which technical trading is only an instance."

To realize the benefit of the World Wide Web on those information markets that focus on stocks, the current rules on the disclosure of material information should be rescinded. At a minimum, they are in clear violation of the first amendment. Fraudulent manipulation of shares will remain a criminal act and can be prosecuted without at the same time regulating and stultifying the entire flow of information from companies.

Information theory can tell you a lot about markets. Quarterly financial information can illuminate the performance of companies. Even the current accounts of trade and capital can yield information about national economies. But information is not creative knowledge. Only knowledge can illuminate the future. Only knowledge can give you glimpses of the sources of creativity in companies and the promise of their entrepreneurial projects.

Only creativity and intelligence can trump the inertia and decay of matter. Cryptically coiled in the nuclei of companies, inside knowledge is harder to get under the new regime. But it remains irrepressible.

The Internet is full of sources of competitive analysis and technological expertise. New companies are emerging with powerful ways of obtaining and revealing the crucial troves of inside knowledge that determine the destiny of companies. Some of this interpreted information is being made available to the public by vendors such as **Gerson Lehrman** with software that enables quick links from investors to hundreds of thousands of available experts. Led by such entropic surprises as Google, **Yahoo** (YHOO), and **AlwaysOn**, a new generation of information companies focused on the real sources of value in markets is creating a new topology of knowledge amid the leveled playing fields of government-enforced ignorance. Watch for these developments and take heed.

– George Gilder, July 18, 2005

Got Questions?

Visit our subscriber-only discussion forum, the Telecosm Lounge, with George Gilder and Nick Tredennick, on www.gildertech.com

GILDER TECHNOLOGY REPORT PUBLISHED BY GILDER PUBLISHING, LLC AND FORBES INC. • Copyright ©2005, by Gilder Publishing, LLC

291A MAIN STREET, GREAT BARRINGTON, MA 01230, TEL: (413) 644-2100, FAX: (413) 644-2123 • EMAIL: INFO@GILDERTECH.COM

EDITOR	EDITORS	EXECUTIVE EDITOR	TECHNOLOGY ANALYST	MANAGING EDITOR	ART DIRECTION	SUBSCRIPTION DIRECTOR	CUSTOMER SERVICE
George Gilder	Nick Tredennick Brion Shimamoto	Bret Swanson	Charlie Burger	Mary Collins	design-O-matic	Rosaline Fernandes	Sandy Fleischmann

For subscription information telephone toll free: (800) 292-4380 • WWW.GILDERTECH.COM