

# On

LIFE IN INFORMATION

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Wyeth Pharmaceuticals

Business Driven

Andrew Worley, Wyeth vice president of information for clinical trials

EMC<sup>2</sup>  
where information lives

greetings

t's the self-discipline, stupid! Nick Carr—featured in *ON* earlier this year—has made another big splash with “[Is Google Making Us Stupid?](#)”, his cover story in the June issue of *Atlantic Monthly*, adding a well-crafted argument to a growing crescendo of voices warning of the dire impact of the Internet on children, adolescents, and adults.

Before this current bout of technology-is-bad-for-us, we heard the same warnings about the impact



on our brains of television and computers (sans Internet). And before that, radio. And so on, all the way back to the invention of writing.

Fear of technology on the one hand and blind adoration of it on the other hand stem from the same misguided attitude—the notion that once tools are developed they become independent of us and can control our destinies: Technology can liberate or destroy us. This is tantamount to believing that the nasty cut I got on my finger from the kitchen knife is the knife’s fault. No: I got a cut because I wasn’t careful how I handled the knife. Tools don’t affect us, they are there for us to use and be affected as we choose to be affected.

It’s our own free will that guides our use of technology and its impact on our lives. And when technology is “addictive,” as is the Internet, it’s our self-discipline in using it that determines its impact on us.

Just before this issue went to press, television provided us with a magnificent display of the fruits of self-discipline: the 2008 Summer Olympics. But discipline determines not just athletic excellence. Psychologists have found that self-discipline predicts academic performance among adolescents better than intelligence does.

The same is true for the impact of information technology. Its value is determined by disciplined use, not just by acquiring the most advanced technology. Discipline in this context means starting with the business need, not technology, as Wyeth Pharmaceuticals did to speed up its clinical trials; having a clear and measurable goal, as when Calamos Investments saw a way to improve customer loyalty; or establishing an enterprise-wide framework for information governance to ensure consistent, well-documented decision-making regarding the use of and access to information assets and supporting technologies.

I learned, painfully, the value of self-discipline this summer when years of being glued for hours to a computer screen without scheduled interruptions and proper exercise came back to haunt me. It was my lack of self-discipline, not my laptop that made me sick. The Internet may harm your brain and your body. You decide.

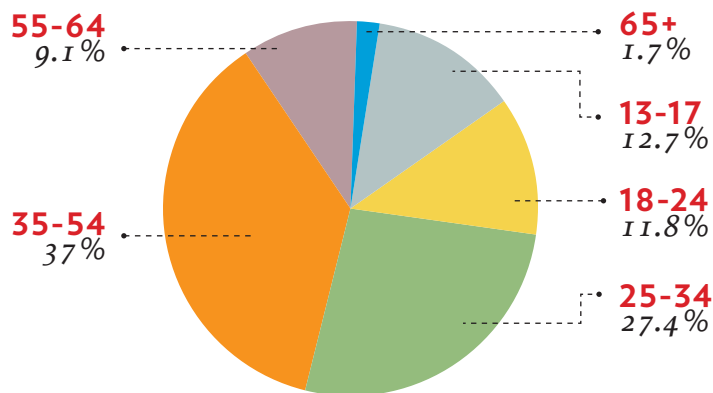
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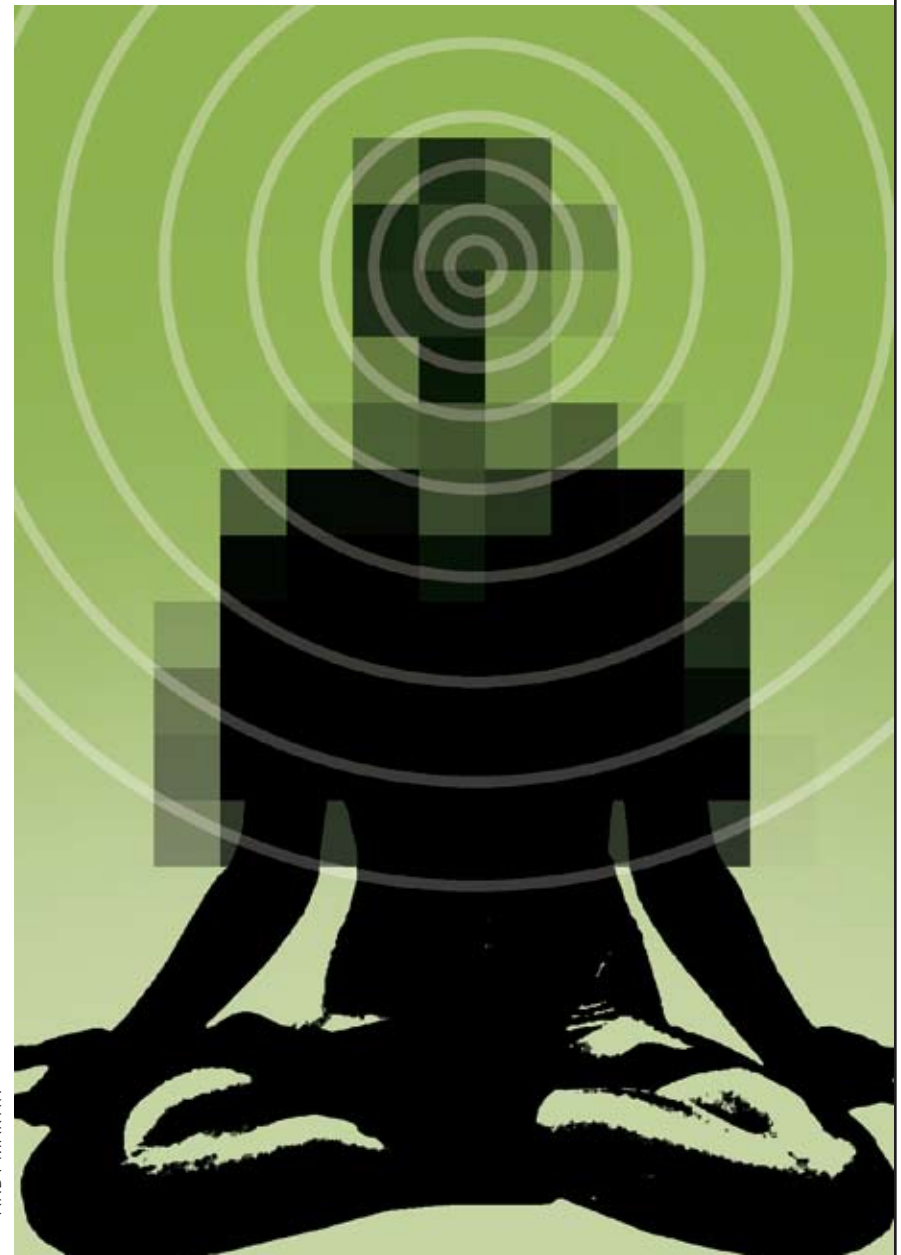
# Information Abundance, Addiction, or Overload?

“THE PDA, CELL PHONE, AND COMPUTER did not usher in our hyper-mobile, split-focus, cybercentric culture. Instead, the first high-tech revolutions more than a century ago created new experiences of time and space that have intensified over time. Inventions like the telegraph, cinema, railroad, and airplane shattered distance and upended ancient temporal rhythms. Our age of speed and overload has been building for generations. ... What’s needed is a renaissance of attention—a revaluing and cultivating of the art of attention, to help us cultivate depth of thought and relations in this complex, high-tech time.” —[MAGGIE JACKSON](#), AUTHOR OF *Distracted: The Erosion of Attention and the Coming Dark Age*

## U.S. MOBILE INTERNET USER PROFILE (AGES)



SOURCE: NEILSEN MOBILE, JULY 2008



ANDY MARTIN

first

## Information Abundance, Addiction, or Overload?

As the number of the netizens grows, the number of the addicted people will grow as well, but we should not worry about the issue too much. ... The young men at the age of growing up have their own problems. Even if there were no Internet they will get addicted to other things.”—Kuang Wenbo, professor of mass media, Beijing’s Renmin University

**“I don’t think Internet addiction disorder exists any more than tennis addictive disorder, bingo addictive disorder, and TV addictive disorder exist. People can overdo anything. To call it a disorder is an error.” — Ivan Goldberg, psychiatrist**



**“OUR NEURONS** will continue to crave and be gratified by the stimulation they receive online. Once a new medium has been invented, we never go back to previous eras of literary languor. ... The only possible way to take action, which Carr doesn’t even suggest, would be for individual readers to voluntarily change their own habits. Not much of this will happen either. For example, while Nick decries the fact that new e-mails appear on his screen while he’s consuming more substantial information fare, I’ll bet he hasn’t disabled that function (although it’s easy to do in most e-mail clients). I know I haven’t.”

—Tom Davenport



**“Is ‘information overload’ the cultural crisis it’s made out to be?... Sure, it can sap not only time but also energy: It’s hard to rise above that demoralizing sense of inadequacy that comes from being unable to keep up with everything. So, follow Clay Shirky’s advice and abandon any hope of keeping up. Admit and accept you’re never going to read—forget answer—all of your e-mail messages, even from people you know. Instead, do what you can, all the while realizing ... the value you’re getting from this abundant wealth of information.”**

—Paul Hemp



“U gotta walk with ur chin @ about 45 degree angle, n u won’t bump into nothing, Trust me it works” -*Advice on correct texting posture on crackberry.com.*

first Information Abundance, Addiction, or Overload?

“When the Net absorbs a medium, that medium is recreated in the Net’s image. It injects the medium’s content with hyperlinks, blinking ads, and other digital gewgaws, and it surrounds the content with the content of all the other media it has absorbed. A new e-mail message, for instance, may announce its arrival as we’re glancing over the latest headlines at a newspaper’s site. The result is to scatter our attention and diffuse our concentration.”

—[Nick Carr](#)



ANDY MARTIN

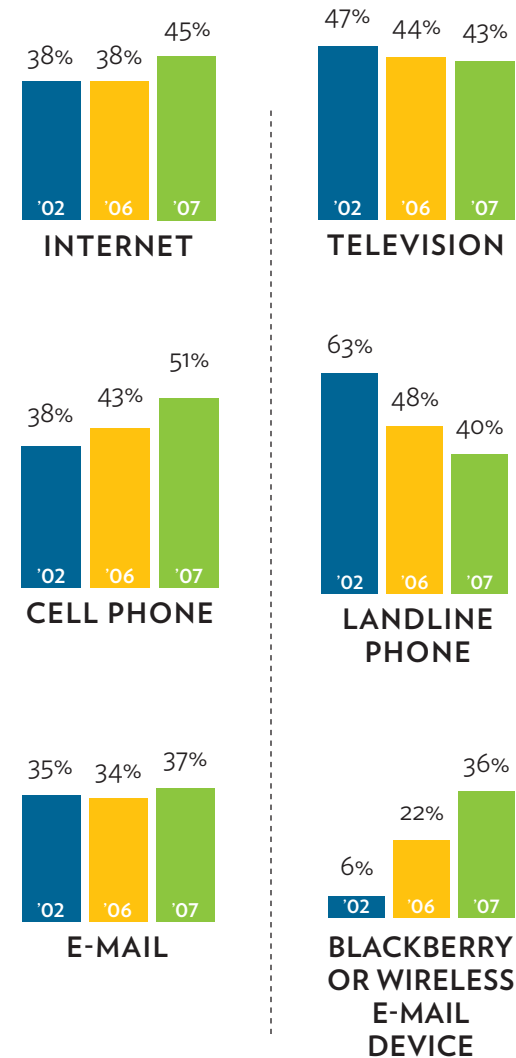
“[Speaking at Microsoft’s 2005 CEO Summit] Bill Gates ... countered the popular notion that workers are universally overloaded with too much information. ... Gates cited the need for access to even more data in areas such as sales results and corporate budgets. ‘I’d say in all of these cases, we are really dealing with information underload,’ Gates said. ... ‘We still want a lot of information.’”—[CNET News](#)



“**INTERNET ADDICTION** ... is a compulsive-impulsive spectrum disorder that involves online and/or offline computer usage and consists of at least three subtypes: excessive gaming, sexual preoccupations, and e-mail/text messaging.”  
—[Jerald Block, psychiatrist](#)

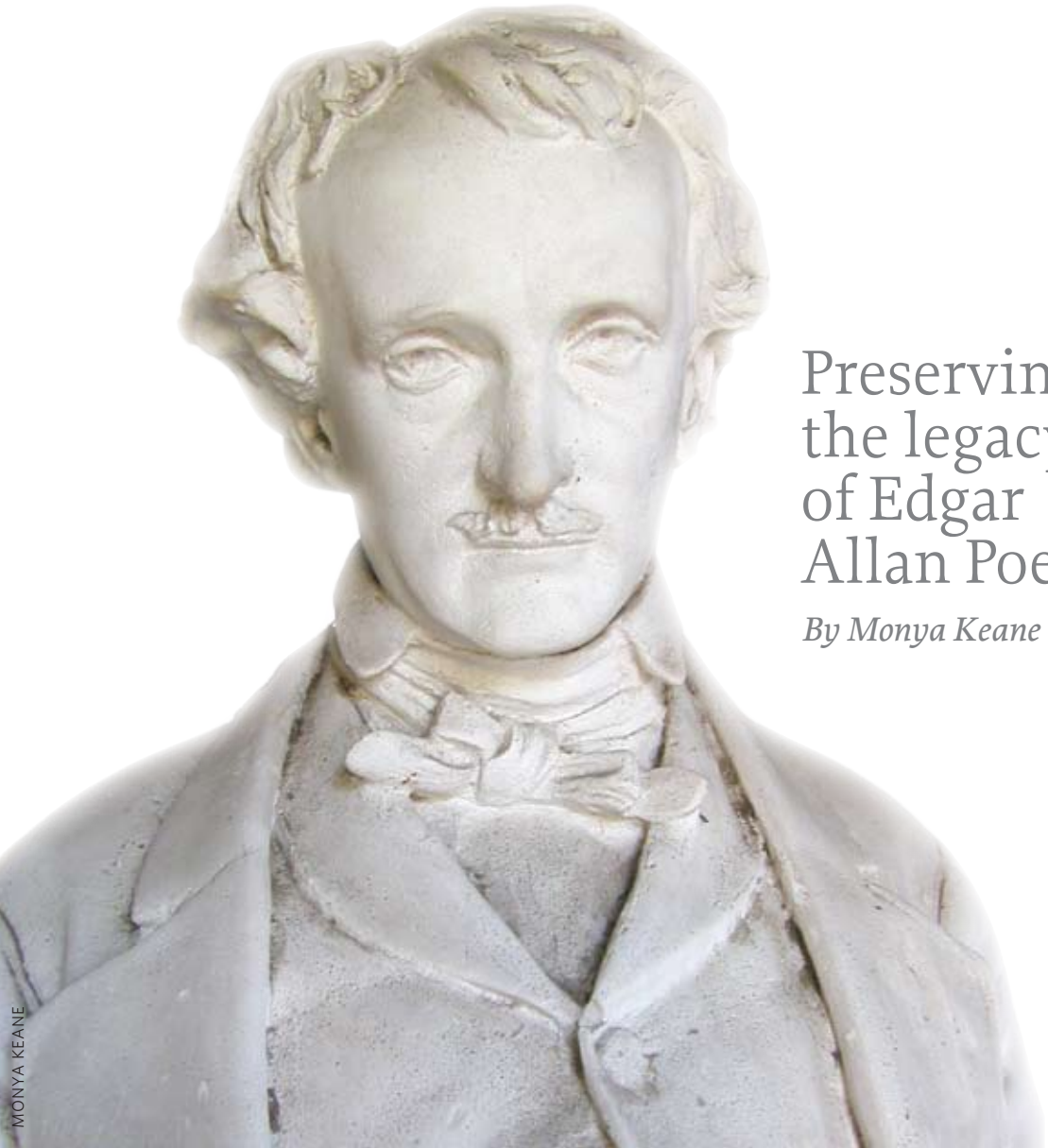
THOSE WHO SAY IT WOULD BE VERY HARD TO GIVE UP...

(among those who use each device)



SOURCE: PEW INTERNET & AMERICAN LIFE PROJECT SURVEYS MARCH 2008

# ‘The World Shall Be My Theatre’



## Preserving the legacy of Edgar Allan Poe

*By Monya Keane*

A mistreated cat sealed in a wall gets out and gets even. Death in disguise finds his victims hiding at a masquerade ball. Besting pit and pendulum, an innocent prisoner survives. An old man’s noisy heart under the floorboards forces his murderer to confess.

“You will not easily be rid of me.” It could be a line from an Edgar Allan Poe story. It isn’t, but refusing to go quietly certainly was one of Poe’s favorite themes. Just think of that raven, never flitting, who still is sitting, still is sitting.

Today, the same transcendental persistence characterizes an impressive effort under way at the [Poe Museum in Richmond, Virginia](#). Using digitization, museum staffers are preserving the legacy of the man known as “America’s Shakespeare” and creating virtual online exhibits in time for the celebration of Poe’s

## ‘The World Shall Be My Theatre’

bicentennial in 2009.

The Poe Museum, founded in 1921, never had a director with a professional museum background until Katarina Spears was hired in mid-2007. Volunteers and paid staff had tried sporadically since the 1970s to catalog unexhibited material, but photos were not always taken, nor were electronic databases used. And, as Spears says, “We still had no clear idea of what we owned, where it was, how to interpret it, or how scholars could benefit from it.”

Now, all material is gathered in a database, with images attached to each record. Digitized material will be accessible on the Web, letting researchers request high-resolution images for study and reproduction rights for publication. The goal is accessibility. “That’s this museum’s reason for being—

not just to preserve items, but also to make them accessible,” Spears says.

When she joined the museum, the condition of the buildings, collections, and exhibits was, in her words, “very bad.” Spears implemented a multi-phase project encompassing facility improvements, new exhibit cases, and environmental controls. They still, however, don’t know how much degradation the collection incurred in years past due to environmental neglect.

Best practice dictates artifacts be periodically taken off display or out of storage to undergo a condition report. With digitization software, staff retain findings from these examinations and determine what conditions accelerate an item’s decay. They’ve dedicated a computer and mirrored ex-

**“We’ve hidden these items for 85 years. There are no limits to what historians might find.” —Katarina Spears**



**Poe's first published volume of stories, 1840**



**On display, an embroidered silk vest worn by Poe**



**A long-lost letter that resurfaced in 2004**

## ‘The World Shall Be My Theatre’

ternal hard drive to storing the images and condition reports in one place, making it easier to track changes. Weekly, backup CDs are stored in a secure collections area at the Library of Virginia.

Some artifacts have been on display for years. “We should rotate them, but we have so many overseas visitors who want to see the key that was in

Poe’s pocket when he died or the trunk he left behind when he left for Baltimore,” Spears says. Popular but fragile items displayed include daguerreotypes and Poe’s correspondence and magazine drafts. They are irreplaceable, and this little museum is the only institution that possesses them. Those items will become part of the digitization effort.

Two imperatives drive the project. One is the objects’ delicate nature. “His letters are perfect candidates for digitization,” Spears says. “If we can display a good facsimile and accompany it with an interpretive panel, visitors can still see just what the document looked

like.” The second consideration is Poe’s looming 200th birthday. Spears anticipates image requests to skyrocket. “We want those important items on the website in time,” she says.

Scholars are expected to use the digitized data in rather esoteric ways, such as studying music compositions inspired by Poe’s works. Others may concentrate on Poe-related botany. Such a scholar might find a digitized annotated first draft of a story in which Poe scratched out “daffodils” and inserted “lilies.” Spears says, “We don’t know all that can be gleaned from our collection because it has never been catalogued to the point where a researcher could say, ‘If only we had seen this letter sooner, it would have given us an entirely new insight into why he wrote that particular poem.’ We’ve hidden these



**The Poe Shrine (rear), constructed with bricks salvaged from the *Southern Literary Messenger* building, where Poe was editor.**

## ‘The World Shall Be My Theatre’

items for 85 years. There are no limits to what historians might find.”

The project will exponentially increase the number of people

the museum serves, helping this tiny site with its tiny budget survive. The Poe Museum could become a massive, world-class virtual institution,

yet still retain the charm of its current setting, with its weathered buildings, brick shrine, and courtyard garden. “Ours is an antique complex,” Spears says.

### AN EXERCISE IN “LITERARY ARCHAEOLOGY”

Digitizing the contents of an 85-year-old museum isn’t as simple as pulling an item off exhibit, placing it on a scanner or taking a photo, and replacing the item. Museum interns Laura Graves and Laura Curzi are digitizing everything possible, including vintage movie posters.

Originally, they looked only for books, pamphlets, and letters to scan, but ended up finding “a ton of stuff” from previously exhibited collections in cartons on a storeroom floor—tucked among boxes of paintbrushes and workboots.

Curzi says, “It was overwhelming. We spent days moving stuff out. Some stuff obviously needs digitization. But we never know which box we’ll find it in.”

One day, the interns were about to discard a pile of dusty old folders. Just in case, they looked through them first. Mixed in were two original Poe letters.

As they uncover artifacts, they research how to handle them. Items sitting in boxes for decades aren’t in good condition. Some boxes have insect damage. Books cracked open for 10 years have damaged bindings. Sunlight deterioration is evident. Artifacts at the bottoms of stacks of boxes are crushed. The interns are placing pieces into proper museum boxes and storing archival papers away from people who may disturb them.

The goal is to find an item, learn its origins, bring it to a state in which it can be scanned (deframing is often involved), digitize it, and keep it in good condition.

How many items will need to be digitized? It’s anyone’s guess. Curzi says, “We never know what will come out of the next box or how long it will take to digitize. This is literary archaeology.”

## ‘The World Shall Be My Theatre’

“Adding a concrete box exhibit hall would be unthinkable. The only way we can get bigger and serve a bigger audience is to do it virtually.”

What would Poe think of this effort to painstakingly preserve all information by and about him 200 years after his birth?

“He probably would claim that he finally is being suitably appreciated,” Spears says. “This is the man who, when readers complained about the depravity of his short story ‘Berenice,’ said, ‘To be appreciated, you must be *read*.’ At 20, he promised his foster father, ‘The world shall be my theatre.’ So Poe would likely say, ‘It is appropriate to digitize me and share my accomplishments and my life. I’ve been telling you people for decades that I am the most important writer ever to live. You are finally acknowledging it.’” ■

### THREE PLANNED PERSPECTIVES ON POE

Three organizations are working on Poe projects, and digitization will benefit them directly.

A project directed by Virginia Commonwealth University Professor Les Harrison will make available a collection of late 19th- and early 20th-century visual art interpretations of Poe. The museum owns artist James W. Carling’s set of gruesome charcoal illustrations of “The Raven.” Try finding a Carling “Raven” image on the Web now. It’s futile. That will change.

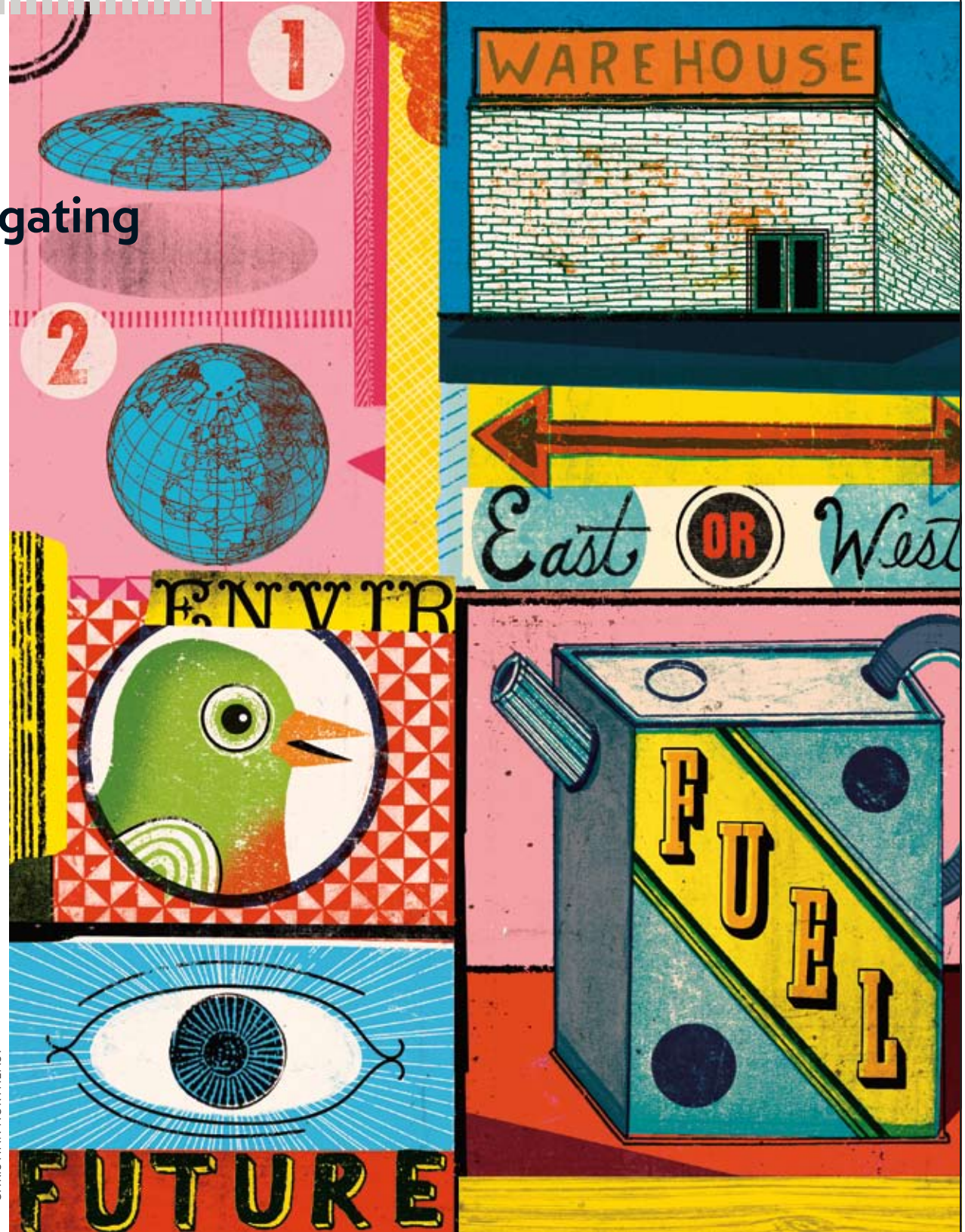
Virginia-based Acadia Press is publishing a book on regional history and Poe containing 180 images, one on nearly every page. Digitization makes the inclusion of those images possible. And the museum gets royalties.

*READ* magazine is geared toward children and will produce an online segment next year using museum images. In an era when kids don’t read as they once did, they still love Poe for the horrific scenarios he depicts. Adolescents also identify with the rejections Poe endured. He was terribly misunderstood, and for that reason, teenagers will always play a big part in keeping Poe’s popularity high.

## Yossi Sheffi on Navigating the Energy Crunch

MIT's Yossi Sheffi is a widely recognized expert in systems optimization, risk analysis, and supply chain management. He recently shared with *ON* his latest thinking about these topics in light of current trends in the global marketplace.

CHRISTIAN NORTHEAST



**You have become well known to a larger public in recent years, in part on the strength of your well-received book, *The Resilient Enterprise: Overcoming Vulnerability for Competitive Advantage*, which was published in 2005. What are you working on nowadays?**

One of my main areas of focus is helping companies adjust to the high price of oil and looking at its implications for all supply chain management activities.

In adjusting supply networks and inventory policies to higher prices, we see several trends. Some companies are moving to more of a regional model for inventory, because when you have centralized inventory you also have higher transportation costs. The result is usually more safety stock in more locations. Similarly, businesses are choosing to make fewer but larger shipments, resulting in

even higher inventory levels. Another shift is that companies are bringing transportation management in-house and are paying for fuel separately. So the cost is visible, and they can control it better.

What we don't know yet is what the impact of higher fuel prices will be on trade patterns. Very few companies are talking about moving production back to the U.S. or Europe. Companies can absorb a lot of fuel cost increases before it becomes viable to move production back to the West. Furthermore, having production in

China is not just a matter of the labor cost advantage. The Chinese have, in fact, become very good at product design and at delivering good quality. The current changes in the global economy are not yet enough to force a fundamental shift that will "un-flatten" the world, but we are trying to understand what will be the tipping point.

Another topic I am working on is an interesting recent social development in the attitudes of the public toward the government. After Hurricane Katrina, people expect the business community to respond to

**“The current changes in the global economy are not yet enough to force a fundamental shift that will ‘un-flatten’ the world, but we are trying to understand what will be the tipping point.”**

disasters faster and better than government agencies. These are expectations that go well beyond what we call today “corporate social responsibility.” That’s probably going to be the topic of my next book.

**Given recent trends in IT, how do you view the outlook for technological breakthroughs, for example the possibility of harnessing Web 2.0 to better link consumers and business?**

Technology, in the aggregate, is moving forward, but if you are looking for big breakthroughs, this will take a while. The challenges are not so much technical as social. We can keep track of what consumers do and what they want, but we can’t always use the information. For instance, because of privacy concerns, there has been surprising consumer resistance to vehicle tags that can automati-

cally assess road tolls.

**What kind of changes in the business environment are possible if the price of oil stays where it is or even goes up?**

Forecasting is difficult, especially about the future. But it is certain that over the next 10 years a higher price of oil will drive businesses to use video conferencing instead of travel and consumers to “visit” other countries via their computers. There are all kinds of ways of moving bits rather than moving atoms.

However, if you talk about 20 or 25 years in the future, I think there will be an amazing reduction in the price of energy in general. We will finally begin to harness renewable energy, and the incentives for this will be global warming, security concerns, lack of conventional energy sources, and

environmental issues. The main challenge is to remove fossil fuel consumption from mobile vehicles—primarily cars, buses, and trucks—and instead power them using stationary sources like power plants. We can power central plants in a variety of ways, including clean coal, nuclear, wind, and solar power. Getting there is a challenge. There’s a lot of unrelated, duplicative work going on in various research institutions and universities. What we should do is harness the entire government research funding apparatus to a Manhattan-like project to operationalize renewable energy. I am hopeful the next administration will do that. ■

➤ **For more on Professor Sheffi’s work, go to <http://mit.edu/sheffi/www/index.html>.**

# IT Helps the Homeless

Lee Cowgill, technology infrastructure manager at the Boston Health Care for the Homeless Program (BHCHP), has a very personal perspective on the organization's mission: He was once homeless himself. Founded in 1985, BHCHP serves homeless adults and families who stay in the city's emergency shelter system, eat in soup kitchens, or visit drop-in centers.

**Lee Cowgill brings more than IT skills to his work of supporting healthcare services for Boston's homeless.**

# IT Helps the Homeless

The organization also cares for formerly homeless people who have progressed into transitional and supportive housing projects or who sleep on the streets or in makeshift shelters. All told, BHCHP serves about 10,000 patients in more than 70,000 outpatient medical, dental, and mental health encounters.

Cowgill, 50, has been with BHCHP for eight years, helping to build its IT infrastructure from what he describes as “a CIO plus eight servers and me in a room the size of a closet” to one with 35 servers and wireless communications.

ON asked him to tell his and the organization’s story.

**You live in Boston now, but what about your earlier life—where are you from and how did you find your way here?**

I was born in Alabama and

grew up there. I went to college for four years, with a different major every year, but never graduated. In my 20s, I moved to Louisville, Kentucky, and then Boston. My first job here was as a cook.

**How did you become homeless?**

When I was younger, I moved around a lot, trying to figure out what to do with my life. I was a pretty naïve Southern boy. By the time I was 28, I was working in restaurants and drinking way too much. I had two alcoholic roommates, I didn’t have health insurance, and I couldn’t pay the rent. Before long, I was homeless. I got very sick and tried to quit drinking, but I had no idea where to go for help.

I ended up in the emergency room at Mass General [Hospital] and met a social worker who got me into detox. Even-

tually I got sober and started working part time, first at a methadone clinic, then at the Pine Street Inn homeless shelter.

**How did you end up working in IT and how did you find your way to BHCHP?**

I’d always been interested in computers. Most of Pine Street’s systems were on paper, so I worked with the John W. McCormack Institute of Public Affairs at UMass to develop the first homeless information system for shelters and the homeless. Eventually, I became a supervisor at Pine Street.

I left Pine Street in 1999 to do temporary IT assignments. I had a couple of full-time temporary jobs, including one here at BHCHP. In 2000, I accepted a permanent position here on the IT staff. At the time, the department consisted of a CIO,

# IT Helps the Homeless

eight servers, and me in a closet-size office. There was a LAN, but there wasn't any e-mail or Internet access.

Today we have 35 servers and 40 applications including medical records, practice management, and VoIP. We're starting to add more complex systems, such as server virtualization.

Along the way, I've taken IT courses, so by now I must have six years of college—but still no degree!

## **What are the special challenges IT faces with a transient population like BHCHP's?**

The people we serve usually have complicated medical histories. Most of them don't have a single medical issue, they have many. If you ask them what medications they're on, they'll say, "a blue pill and a

yellow pill." Without computerized medical records, there is no way to know what they're taking.

Because these people are homeless, they tend to move around. We provide health-care in more than 80 shelters and sites. We even have one at Suffolk Downs Racetrack for the men who live and work in the horse barns. We also have a family outreach team that goes into shelters and follows families when they find homes.

Our medical people can't haul around file cabinets, but they need access to patient information. We've looked for more ways to securely deliver information and services. For instance, we now have handheld devices that a nurse on Boston Common can use to send a prescription directly to a pharmacy. We're also looking at ways to give the area's

homeless access to their own medical records.

## **Do Bostonians know the scope of homelessness here?**

No, they don't. People think of "the homeless" as that guy on the corner holding up a cardboard sign asking for money and they pass him by. Their stories are a lot more complex than that and there are many successes you never hear about.

## **Obviously, you are one of them. You sound like a happy man today.**

I am. I'm about to close on a condo—my first home that I will own. I'll have gone from homeless to homeowner in 21 years. Now I want to settle back and appreciate all the good things that have happened in my life. ■

TURNING “MADE IN CHINA” INTO

# “CREATED IN CHINA”



*By Professor Huanguo Zhang, Wuhan University, China*

# “CREATED IN CHINA”

**Professor Huanguo Zhang of China’s Wuhan University is an expert on information security, trusted computing, fault tolerance, and computer applications. Founded in 1893, Wuhan University is one of the oldest institutions of higher education in China; today, thanks in part to Professor Zhang’s research, it boasts a strong program in information security. In 2001, the school developed the first undergraduate program for the discipline in China and two years later, launched a master’s program, a doctoral program, and a postdoctoral industrial-based program in information security.**

**ON magazine is grateful to Professor Zhang for sharing his insights on the state of research and development and information security in China today.**



Deng Xiaoping once said, “Science and technology is the primary productive force.” Guided by this principle, the Chinese government and business sector have attached great importance to research and development initiatives. In turn, this has had a major impact in promoting China’s social progress, as well as in improving quality of

**Professor Huanguo Zhang (center) and his team at China’s Wuhan University have been deeply involved in information security R&D.**

life for China’s people. Investment in R&D from the government, industry, and university sectors is growing significantly from year to year. However, the present investment is still inadequate to meet the growing demands of development in China.

To put it succinctly, there is great interest and effort going into transforming “Made in China” into “Created in China.” The Chinese people want to be seen as important generators of new product ideas. The fact that more and more foreign enterprises are entering the Chinese market will act as a catalyst and speed up the process of the globalization of China’s economy. In this process, both Chinese and foreign enterprises will win together.

Of course, China’s technolog-

ical maturation provides attractive opportunities for foreign investment, evidenced by the fact that most of the best-known global enterprises—such as Microsoft, Hewlett-Packard, and EMC—have established research organizations in China. While some of these organizations are focused on product localization, others are performing basic research here. As China becomes more developed technologically, the environment for foreign research organizations will improve and the number of new research institutions being launched in China will rapidly increase.

Obviously, that is a good thing for China. However, the increasing number of foreign enterprises here has also intensified the competition for talent. Generally speaking, foreign companies are prevailing in the acquisition of talent

because they can offer higher salaries. Yet China is a country with a large population, and the number of students in its universities ranks first in the world. While a large talent pool is important, the quality of that pool cannot be neglected. I think that China should put more emphasis on the quality of personnel training in order to cultivate enough desirable talents for the society. I also believe that foreign companies in China are a very good incubator for improving the quality of talent.

## **PROTECTION OF INTELLECTUAL PROPERTY**

With the development of new technologies comes the need for stringent intellectual property rights and software copyrights. China is a developing country where some problems surrounding intellectual prop-

erty rights and software copyrights still exist. The issue of protecting software copyrights is so important it could threaten the growth and development of China’s software industry. Because of this, the Chinese government has enacted new laws to protect software copyrights of developers.

I believe we must adopt not only legal but also educational and technological means to protect intellectual property. At present, my team is developing a software copyright protection system based on trusted computing technologies. This project is supported by the Chinese government.

## **INFORMATION SECURITY R&D**

Trusted computing not only requires complete information security in a single location but also the ability for multiple people to access and manipu-

late information “in the cloud” with every participant and the information itself protected. We are involved in a multi-party research collaboration called the Daoli Trusted Infrastructure Project that seeks to address the challenges of trust and security in online collaborations between local and remote parties.

In cloud computing, with numerous resource providers and consumers, traditional coarse-grained yes/no data security policies are not suitable. We believe that a critical requirement to strengthening security is to add behavior conformity—an assurance that participants will conform to the rules and policies of the virtual collaboration. A trusted computing platform, therefore, is a combination of a technological environment in concert with secure behavior. Although the so-

lutions of the Daoli Project are just a proof of concept today, these innovations come from a real requirement of developing cloud computing, which I feel will be increasingly important to global enterprises.

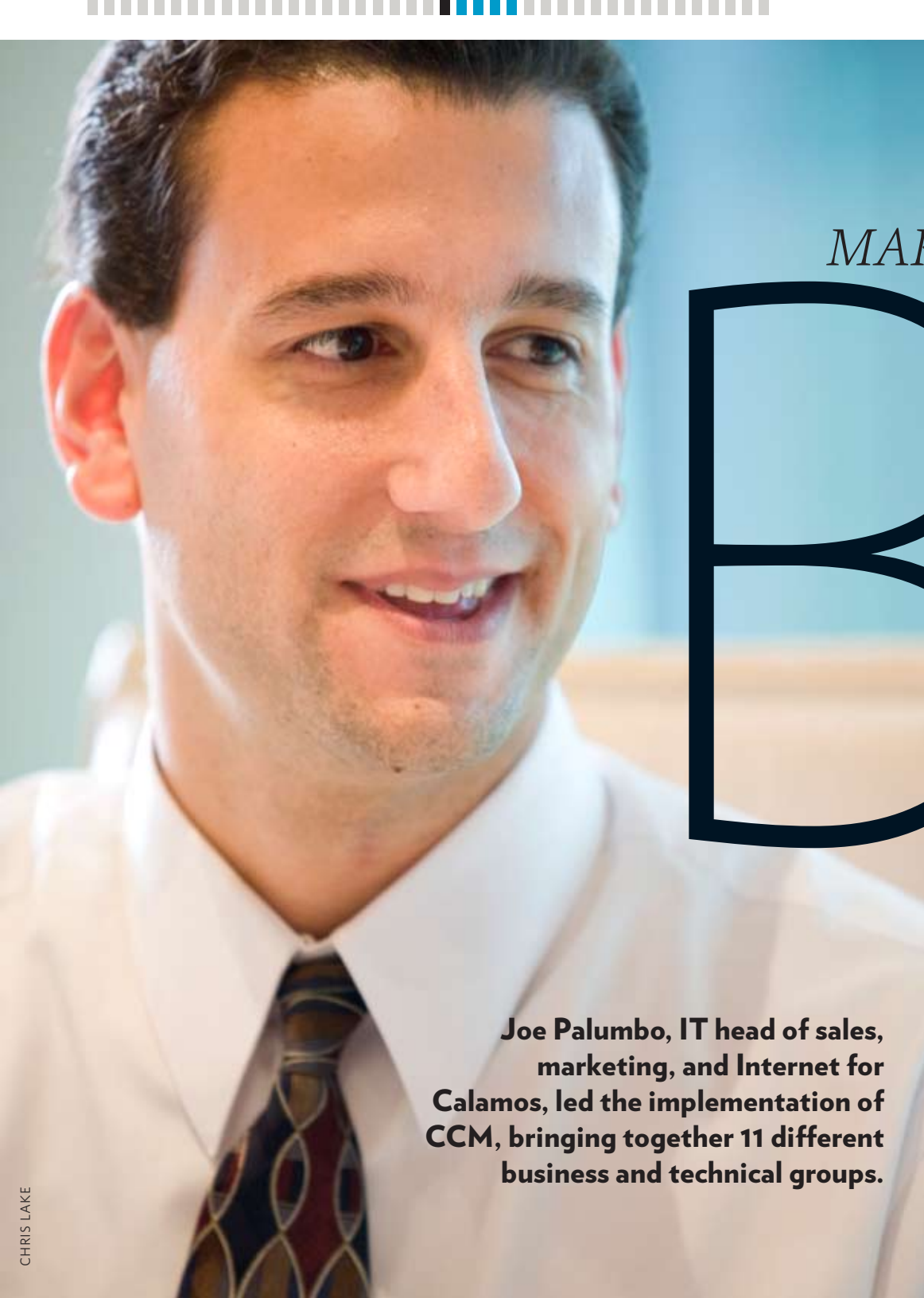
Through the collaboration with Chinese enterprise, we have developed the first trusted computer and trusted platform module in China. Supported by China’s national high-tech development 863 Program, we have also developed the first trusted PDA and software system for testing and evaluating of trusted computing in China. Based on this R&D, we are participating in the establishment of the trusted computing technology standards in China.

#### **PROSPECTS FOR THE FUTURE**

The Chinese government is aligned with industry and universities in understanding the

importance of building China’s competencies and capacity with respect to scientific and technological R&D. Internal and foreign investment is growing, our universities are producing valuable information engineers and workers, and our profile in the global economy is rising. China’s prospects for the future in this area are very hopeful and strong.

At the same time, the strengthening of information security laws, technologies, and practices is essential to maintaining and building on the progress we have made to date. This takes work, commitment, and funding, which China has demonstrated its willingness to do. With all these activities undertaken together, China will soon stand with other technologically advanced nations as a leader in the global information-based economy. ■



*MAKING A*

# BIG

*STATEMENT  
WITH CUSTOMER  
COMMUNICATIONS  
MANAGEMENT*

**Joe Palumbo, IT head of sales, marketing, and Internet for Calamos, led the implementation of CCM, bringing together 11 different business and technical groups.**

*By Christine Kane*

# MAKING A **BIG** STATEMENT

*A growing number of organizations are deploying customer communications management (CCM) solutions to streamline how they create, personalize, and distribute essential customer communications. For Calamos Investments, using CCM to generate quarterly account statements provides a powerful way to strengthen its relationships with clients.*

Calamos Investments wanted to raise the bar. A Naperville, Illinois-based firm with \$39.8 billion in assets under management as of July 31, 2008, Calamos places a premium on providing exceptional client service to its institutional investors and private wealth management clients.

One of the main vehicles for communicating with clients is the quarterly client package (QCP), a detailed account statement that ranges from eight to 25 pages. In addition to reporting on an account's performance, the QCP is tailored for the specific account's investment perspective. For example, it includes comparisons to relevant industry benchmarks and relevant market commentary from Chairman, CEO, and Co-CIO John P. Calamos Sr. and Senior Executive Vice President, Head of Investments, and Co-CIO Nick Calamos, CFA.

## **STAYING AHEAD OF THE CROWD**

Explaining Calamos' decision to deploy a CCM solution to accelerate the creation and distribution of the QCP, Maryann Bianchini, senior vice president, director of client relationship management, and chief administrative officer for institutional clients, says, "John and Nick are one of the longest-standing investment management teams and are very well respected in the industry. We want to get their views into clients' hands as soon as possible."

In the past, it typically took from 28 to 30 days after a quarter closed to generate the QCPs and to correct any er-



**Maryann Bianchini notes that Calamos has reduced the time it takes to produce its quarterly client package from 30 days down to 18 to 20 days.**

CHRIS LAKE

rors that may have crept in as a result of manual processes. With a new CCM solution based on EMC Document Sciences xPression software, Calamos has cut that process down to 18 to 20 days and is working toward a target of 12 to 15 days. “The system has allowed us to dissect our client base and create a process where commentaries are written for particular clients and asset classes. All this client-specific information is automatically updated into templates and applied to the appropriate accounts,” says Bianchini.

#### **MAKING MASS CUSTOMIZATION A REALITY**

She offers an example of how content is automatically tailored to reflect a client’s unique investment framework. “Some clients who invest in Calamos’ convertible strategy may view convertibles as an enhancement to their fixed-income allocation. Other clients see convertibles as a low-risk equity alternative or as a separate asset class. For each client, the system inserts the relevant market commentary and industry benchmarks into the QCP, based on the client profile. It is all presented in a visually rich and easy-to-read format.”

In the first months after the system was deployed, clients reported that the new format was

# MAKING A **BIG** STATEMENT

a vast improvement over the old, and relationship managers indicated that their quarterly follow-up conversations with clients were much more productive. “Clients have a good grasp of what we think about the markets and a better understanding of performance,” says Bianchini.

## **AN OVERVIEW OF CCM**

Like Calamos, many organizations are exploring the benefits of CCM, which brings together four technologies that previously were deployed as point solutions: imaging, archive, document composition, and electronic forms. Citing the financial services sector as an example, Gartner Vice President Toby Bell says, “Banks and insurers often have numerous, discretely managed components that generate letters, statements, policies, etc. But they are rarely harnessed collectively toward broader strategies like improved brand identity management or enhanced customer engagement across all touch points. With customer communications management technologies and disciplines, achieving the ‘intimacy at scale’ these platforms can provide in terms of production, personalization is easier. CCM can deliver other value, ranging from loyalty to up-sell to improved institutional image—even as costs

and complexities are reduced.”

Built on service-oriented architectures and offering XML data integration capabilities, CCM solutions automate the process of pulling data, graphics, images, and written content from multiple sources into design templates that present the content in a consistent and visually compelling way. The customizable templates also ensure that an organization’s brand elements, such as logos and type fonts, are correctly applied. Simultaneous creation for electronic and print formats enables flexible distribution via the client’s preferred channel: e-mail, HTML, PDF, or traditional mail. (For example, PDF copies of Calamos statements are stored in the CRM system so relationship managers can easily access them.)

Bell notes that “chief marketing officers are investing in the technology partly because it promises ease of use for non-technical process participants and reduces reliance on IT for support. Business and marketing owners can actually manage their own content from design through delivery.” In addition to the creation of client account statements, CCM is being used to create insurance policies, business contracts, and marketing collateral. In the derivatives markets, CCM is seen as

# MAKING A **BIG** STATEMENT

a possible solution for reducing a backlog of trade confirmations, which are highly complex in nature.

## **WHAT MAKES FOR SUCCESS?**

Coordinating 11 different business and technical groups and leading the firm's CCM implementation was Joe Palumbo, IT head of sales, marketing, and Internet for Calamos. He sees several factors contributing to a successful deployment. "From day one, we made sure our IT staff understood this was not about implementing some new piece of software," says Palumbo. "This was about creating a whole new way to communicate with our clients on a completely personalized level, unlike anyone else in the industry. Adapting that mentality changed everyone's focus, vision, and attention to detail."

Equally important was Calamos' decision to treat CCM as an enterprise program, rather than just a one-off project. "A program-level initiative was fairly new to the firm, so we really had to justify the numbers to gain executive buy-in and commitment," says Palumbo. But the initial investment has already paid off. "With a robust infrastructure now in place, we can plug in new applications with minimal effort, providing frequent and consistent business value."

## **MORE OF A GOOD THING**

Based on requests and feedback from business units, Calamos routinely rolls out system enhancements. For example, new templates will allow relationship managers to easily create off-quarter statements to take to customer visits or to use to answer inquiries. "In the past, a client relationship manager might spend two hours creating a PowerPoint presentation," says Bianchini. "Now they can customize the statement in 20 minutes or less, leaving more time to speak with clients." Relationship managers can add personalized comments for individual clients, and the marketing team can highlight special events or products that complement a client's current holdings. "IT maintains the technology and develops new enhancements, but we have moved the content creation and management to our CRM and marketing teams, and that has really optimized the process," says Palumbo.

Bianchini notes that advance planning is one of the keys to success with CCM. "You need to sit down and think the process through from beginning to end, considering all the little details. If you start at the end and work your way back, you'll get the best results." ■



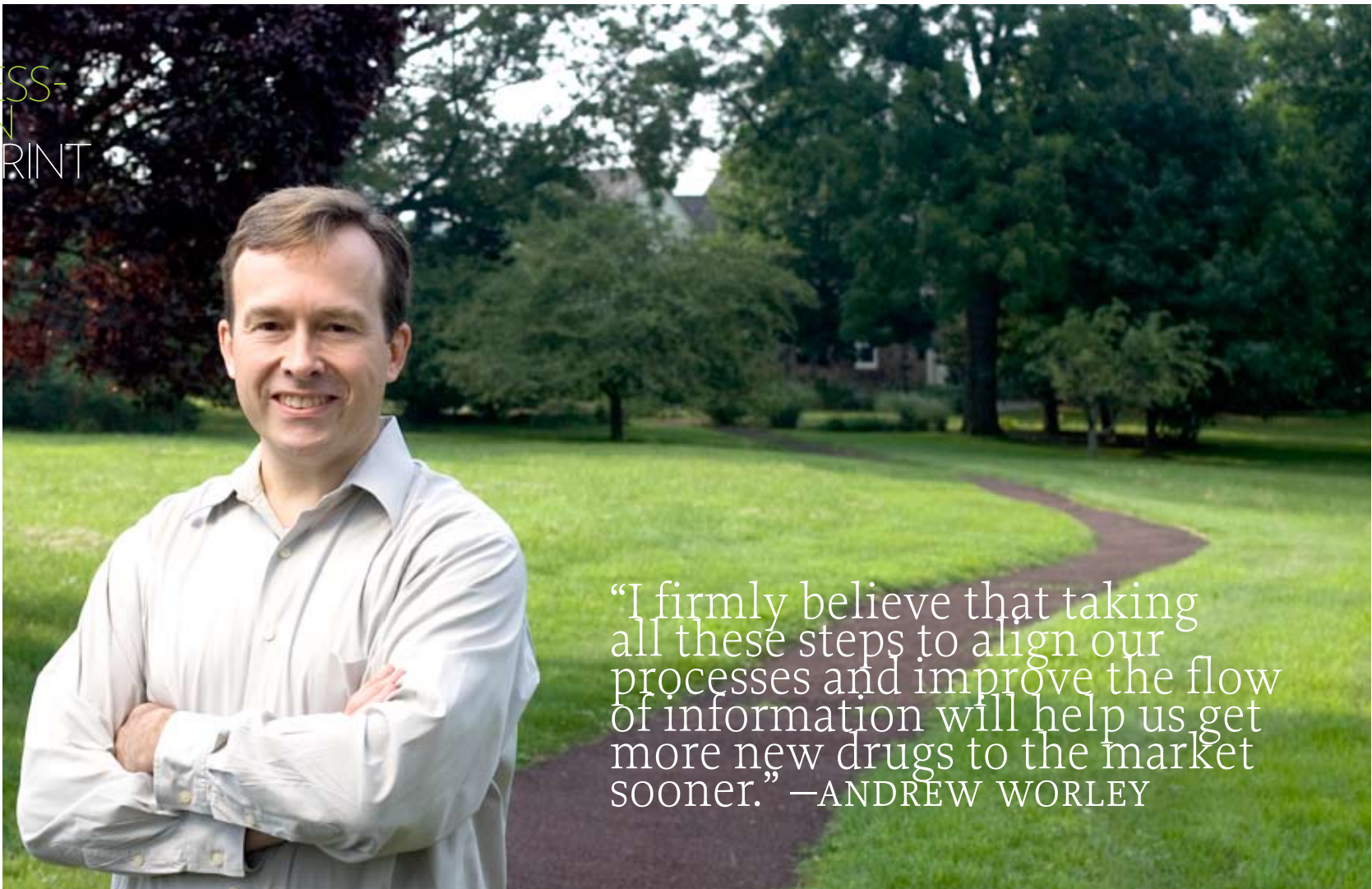
**Andrew Worley, Wyeth vice president of information for clinical trials, is helping develop a holistic approach to getting new drugs to the public faster.**

RYAN DONNELL

*By Jean Gogolin*

# DEVELOPING A BUSINESS- DRIVEN BLUEPRINT FOR IT

In 1747, Royal Navy physician James Lind—determined to find a treatment for the scurvy besetting British sailors—tested substances ranging from vinegar to cider to citrus fruits on selected groups of those afflicted. He found that the group given oranges, lemons,



“I firmly believe that taking all these steps to align our processes and improve the flow of information will help us get more new drugs to the market sooner.” —ANDREW WORLEY

and limes largely recovered from the disease after six days. From that experiment came the term “limey.”

If only finding cures for disease was still that simple.

Today, clinical trials are one

of the most expensive and time-consuming parts of drug development and a major factor in their cost. Even after potential compounds are developed in the laboratory, about 1,000 of them are tested before

just one reaches the clinical trial stage. The entire process of discovery, proof of concept, clinical development, and regulatory approval can take up to a dozen years.

The clinical trial stage alone

involves dozens of steps, including designing the trial, choosing investigators and test sites, recruiting participants, setting up protocols, collecting and analyzing enormous amounts of data, and ultimately, if the drug proves safe and effective, obtaining regulatory agency approval. It's a process that typically involves multiple departments in a pharmaceutical company, often relying on fragmented information and technology management systems.

Although pharma firms have invested heavily in clinical information technologies, they are often characterized by a loose confederation of legacy systems, each designed to address specific parts of clinical development. That model no longer works. If the pharma industry is to survive, clini-

cal trials must be supported by standards, integration, and interoperability.

### HITTING INDUSTRY CHALLENGES HEAD-ON

Wyeth Pharmaceuticals—which in 2007 spent \$3.3 billion on research and development and typically has 100 to 150 drugs undergoing clinical trials—is addressing the problem head-on, using a four-layer, business-driven blueprint developed by EMC Consulting.

Using the blueprint, an organization first defines its business objectives and, from them, determines which information, solution, and technology architectures will best achieve those business objectives. "It's a holistic approach to getting new drugs to the public faster," says Andrew Worley, Wyeth vice president of information

for clinical trials. "We're already seeing the benefits."

### WHAT'S DRIVING THE SHIFT?

In 2004, the U.S. Food and Drug Administration issued a paper about the slowdown in development of new medicinal products, challenging the pharmaceutical industry, academia, and the government to turn the situation around.

Unfortunately, in the years since, a number of industry trends have made it even more difficult for companies to rise to the challenge—a situation described by industry consultant Doug May as "a perfect storm of problems."

One trend is that the industry's traditional business model of relying on a few blockbuster drugs for their profits is falling apart, as broad, long-term use of some of those drugs has

revealed problems not initially evident. As a result, regulatory agencies around the world are getting tougher in approving new drugs.

Another challenge is that diseases are becoming harder to address and cure, as longer life spans result in more people with chronic conditions, such as those associated with obesity, and with neurological diseases such as Alzheimer's and Parkinson's.

Drugs based on genomics—tailoring compounds to individuals, rather than making them one-size-fits-all—may be part of the answer, but that is largely in the future.

### **BUSINESS ARCHITECTURE PRECEDES IT INFRASTRUCTURE**

These factors, along with growing cost and pricing constraints, have given pharmaceutical

companies a stronger incentive than ever to increase clinical trial productivity. “Most of the pharmas have tried to address productivity by investing in their technology infrastructure,” says May. “But that’s not where the big business benefit lies. They should be starting from the top, with the business architecture.”

Last winter, Wyeth undertook just that approach, developing a vision and direction to identify how its Clinical Operations unit wants to operate over the next three years, and then how to align its IT investment with that vision. The company chose a three-year timeframe, says Worley, because “any less than that doesn’t give you enough time to implement your vision, and any longer means too many things can change.”

Worley began by holding

a series of workshops with about 30 stakeholders from five critical areas: Drug Supply, Clinical Operations, Medical, Laboratory, and executive management. From these workshops emerged an actionable process plan—or roadmap—that will change the way Wyeth develops new drugs. Workshop participants addressed what information people need to do their jobs and how it should be organized to ensure easy access; how information should flow between organizations and among all the people involved in clinical trials around the world; and how to interconnect the unit’s functional and IT stovepipes.

### **ONE VISION, SIX IMPERATIVES**

The resulting plan calls for “optimal utilization and

effectiveness of trial operations resources enabled through aligned process, technology, and information investments.” The group also defined six imperatives for the vision:

- Support the development and maintenance of strong relationships with investigators and other site study personnel.
- Facilitate outstanding trial planning and design, optimized study placement, proactive site and study management, and consistent execution of harmonized processes.
- Capture and manage complete and trustworthy operational data to support timely and informed decisions.
- Optimize collaboration and information exchange with

internal and external stakeholders.

- Provide flexibility to accommodate required variations at global locations.
- Continuously guide technology investments that are tightly aligned with the Global Clinical Team’s business objectives.

Although the plan has been in place only a few months, Doug May calls it “a real live business drama playing out.”

Responding with a laugh, Worley says, “Maybe ‘drama’ is an exaggeration. But it’s certainly important, and delivering on it is both daunting and very exciting. I think it’s significant that much of our technology investment for 2009 will be directly affected by this blueprint.”

### HEALTHY TIMES AHEAD?

The big question, of course, is will the blueprint save time and money? Worley believes it will, both in ROI and cycle times. “Though it’s hard to predict exactly how much or how soon,” he says, “I firmly believe that taking all these steps to align our processes and improve the flow of information will help us get more new drugs to the market sooner.”

In the future, the mapping of the human genome may make it possible for pharmaceutical companies to develop personalized drugs based on individual genetic markers. It seems likely that the companies that have honed their time-to-market processes and skills will reach that goal first. ■

INFORMATION GOVERNANCE IS A

# NECESSITY

BY DAVID G. HILL

Businesses are hearing more and more about the need for information governance. But why is information governance a necessity? The problem of lost business information can serve as a good illustration.

## **LOST IN PLAIN SIGHT:** **BUSINESS INFORMATION**

Although business processes—and the information passed back and forth among those processes—are considered absolutely vital to the business, information technology has tended to be application-



STUART BRADFORD

# NECESSITY

centric. As a result, business applications are typically designed for initial information creation and first use; they are not designed for the control and use of the information during its entire lifecycle. Often, after that first use, information languishes under the control of the creating application, where it cannot be easily accessed or reused by other applications and processes. For example, after an OLTP (online transaction processing) application closes a sales transaction, it has done its job. However, the information on the sales transaction may be combined with other information to craft a sales strategy directed at a particular customer or determine buying patterns that can help in product reordering and inventory management.

That languishing informa-

tion is typically “fixed content,” i.e., information that does not change after its creation. Businesses may not be able to easily find and use this type of information, which may comprise up to 80% of an organization’s information assets. Generally knowing that information is located somewhere within a large pool of data is not the same as being able to extract exactly what is needed. In effect, critical business information may be lost in plain sight.

The cost to the business of not being able to locate this information is two-fold. First, opportunities are lost for creating added business value such as improved customer relations or identifying new market segments. A second potential cost is the increased risk to the business when information is not available when needed, e.g., in

case of litigation or to comply with government regulation.

## **LOST AND FOUND DEPARTMENT: THE ROLE OF IT GOVERNANCE**

IT governance is the enterprise-wide framework of relationships and processes that govern IT decision-making in IT investment decisions, infrastructure management, client relationships, and all other aspects of the IT function. This framework and the management processes associated with it help the business define and enforce policies that govern the proper location and movement of information throughout its lifecycle. With proper IT governance in place, the business knows which IT assets to deploy in support of what type of information. The

# NECESSITY

IT infrastructure is optimized to efficiently manage, locate, and deliver information when and where it is needed.

But finding lost information is of no use if the business does not know what it needs to do with that information. Information governance sets the structure for dealing with that problem.

## **FOUND AND USED: THE ROLE OF INFORMATION GOVERNANCE**

Information governance is the enterprise-wide framework that includes the people, processes, and procedures necessary to ensure the preservation, availability, security, confidentiality, and usability of an enterprise's information. An information governance team or committee should be composed of

representatives of executive management (who understand the business strategy), the IT organization (who understand the technical IT requirements), the business units (who understand the business requirements), and the legal department (who understand the legal and regulatory requirements).

The ongoing work of the information governance team guides the proper use of all the information owned or controlled by the enterprise. "Proper use" means adhering to the information governance policies regarding accessing, safeguarding, and handling of the information. It also means the mining and analysis of the information to extract added business value in support of the business strategy.

With a well-designed infor-

mation governance framework in place, the adoption of specific technologies (e.g., e-discovery, content management, security, storage, active archiving) can proceed according to a concerted plan rather than as a reactive response to the latest stone-in-the-shoe problem. Information that is lost not only needs to be found, but also managed and used. And that requires a formal, enterprise-wide information governance initiative.

David Hill is principal of [Mesabi Group](#), a Boston-based industry analyst firm that focuses on storage and storage management-related issues. His book on data protection will be published in 2009.

on change



HARRY CAMPBELL

## WALKING THE ELECTRONIC MARKETPLACE

Getting to know your customers—virtually  
*By Jim Champy*



ASIA KEPKA

### JIM CHAMPY

is chairman of Perot Systems' consulting practice and the best-selling author of several books on business leadership and performance. His latest book is *Outsmart! How To Do What Your Competitors Can't*.

**WALKING THE ELECTRONIC MARKETPLACE** *A young entrepreneur recently told me that the Internet is “a 20-year-old’s best friend.” When I asked what he meant by that, he responded that the Internet gives him the competitive advantages of more experienced business people. He isn’t just more technically adept than his elders. The Internet enables him to learn fast. He can get immediate feedback about what customers think of his products, and he can modify his offerings—and even his business model—depending on customer response. He can also get into a market quickly, without a significant investment in bricks and mortar.*

The discussion reminded me of Peter Drucker’s advice: Learn by walking in the marketplace. Of course, Drucker was telling managers to get out of the office, talk to customers, experience how your company is *really* doing in its markets. Drucker’s advice is still sound, and there is nothing like talking with a customer, face to face, especially when that customer is unhappy. Today, we can also electronically walk in the marketplace, although getting the most out of electronic channels requires some additional processes and sensibilities.

**FORM A COMMUNITY TO TEST YOUR IDEAS**

You can engage customers one at a time, but there is nothing like having a cadre of fans and critics standing by to test your ideas and to add value to

your product or service. It’s easy to do electronically. Those of you who are serious chefs know about a cooker called the Big Green Egg. It’s a ceramic barbecue grill and smoker, based on an ancient Japanese design. Eggheads are tireless promoters who tell anyone and everyone of its virtues, and they do it regularly on a website known as the Egg Head Forum. Anywhere from 400 to 900 Egg lovers post messages on the Forum daily, with advice on the product, recipes, and answers to other members’ questions.

Just think of the benefits you stand to gain from engaging customers in this way: free advice, promotion, and added value for your product. But engaging a community also requires that you be transparent and open about your product and

your ideas—and that you listen to what customers are telling you. The flip side of having an organized customer community is that, if your product doesn't measure up, the world will soon learn about its flaws. Transparency puts a premium on listening and performance.

### **ADD HIGH-TOUCH TO HIGH-TECH**

The Internet provides remarkable access to customers. But don't get seduced into believing that all interactions can be carried out electronically. Well-designed self-help processes and systems, which can take thousands of hours to develop, should satisfy most customer needs, but when something goes wrong—or you have an angry customer on your hands—there's no substitute for human contact, expertise, and empathy.

This was a lesson learned by Partsearch, a company whose website helps retailers, repairmen, and consumers thread through a maze of more than 8,000,000 parts for consumer electronics and appliances. When Partsearch discovered that a significant number of its customers were ordering the wrong part on the first try, the company built a knowledgeable service organization to assist customers. Listening directly to customers, especially when a breakdown occurs, not only

prevents customer defections but also helps a company identify where its processes need to be improved.

### **DON'T ASSUME A FAST ADOPTION TIME**

If your contact with customers is principally through an electronic interface, it may take more time than you think for people to learn how to engage. When Citibank first offered services via automated teller machines (ATMs), the only function available was account balance inquiry. When the first ATM device was placed in the outer lobby of a branch in New York City, executives of the bank watched as an elderly woman checked her account balance on the ATM, went inside and withdrew some funds, and then returned to the ATM to check that her balance had been adjusted. The executives immediately knew customers would embrace this new service.

But not all technology interfaces are that quickly adopted. An interface must offer some utility to the customer—like the new recipes that Eggheads get on their Forum—and must be elegantly designed. Your electronic interface is also part of the customer experience. As Drucker would have advised, you need to be able to converse with your customers easily, whether on the street or online. ■

## THE INFORATI FILES

Charles Seife on the universe and other information processing matters *By Tim Devaney and Tom Stein*

Science journalist Charles Seife is not afraid to tackle the big topics. Really big topics. Like how the universe works. His latest book is called [Decoding the Universe: How the New Science of Information Is Explaining Everything in the Cosmos, from Our Brains to Black Holes.](#)

Seife says it's best to think of the universe as an enormous laptop computer. "It's definitely an extreme concept," he admits, "but the way to understand the universe is through information processing. The entire universe is shaped by the information that's moving back and forth in it." We reached Seife in New York City, where he's a professor of journalism at NYU.

CHRIS CAMPISI



**When you wrote *Decoding the Universe*, weren't you afraid you were biting off more than you could chew?**

At *Science* magazine I was covering physics for a number of years, and there were all these things that seemed to fit together if you looked at them from an information-theoretic perspective. But no one had connected the dots except for a few really good scientists. I wanted to tell the story of how quantum mechanics and thermodynamics and information theory all were, in some ways, facets of the same thing. The way to understand the universe is through information processing.

**You begin your book with the World War II code crackers. Is that the beginning of information theory?**

Information theory was born in the sweaty code rooms of World War II. Before that, the United States was very skeptical of the concept of code breaking. But several very important turning points were caused by cryptography. In the Atlantic, the cracking of the Enigma code saved England's bacon. U-boat warfare was crushing England, and by cracking the code, they were able to figure out where the (enemy) submarines were.

**Is there such a thing as too much information?**

Absolutely. I think data in some ways increases exponentially, whereas useful data increases linearly. So as data gathering gets better and better, it gets harder to sort the wheat from the chaff.

**What's the most important piece of information you've ever learned?**

The most important piece of information, broadly speaking, is not to trust any information.

As a journalist, I've learned that information, no matter how neutrally presented, is subject to measurement errors or biases in the person who's presenting the data.

**What are your favorite information sources?**

I love going through census data, electoral records, SEC filings. It's a goldmine of fun stuff. When you have a hunch about something, like the behavior of a certain segment of the population, census data will often give you an indicator that allows you to test that hypothesis indirectly. For example, during Hurricane Katrina there

was a bridge leading out from New Orleans to a parish on the outskirts, and there was an incident in which sheriffs were reportedly turning away refugees, not allowing people to cross. Some of the initial reporting downplayed the race element. But from the census records it became obvious that, demographically, it was a very different group of people on each side of the bridge. And if you went to electoral records you found that one parish voted heavily in favor of David Duke in the 1992 Senate election, and the other side of the bridge voted very much against David Duke.

**Can you give an example where data has helped expose wrongdoing?**

When the rolling blackouts were occurring in California, if

you looked at consumption on the power grid, there hadn't been an increase over the previous years, as a lot of the pundits were implying. Consumption was actually slightly lower. So what was going wrong? What was going wrong was that power plants were being taken offline. And there are indications that it was possibly being done to create an artificial shortage. And it was in the data if people knew where to look.

**What impact does the information explosion have on privacy?**

Privacy protections were always based on the idea that we, as citizens, had to prevent a monolithic force like the government from spying on us. Instead, it turns out that we have these distributed information-

gathering networks in private hands, and it's the confluence of these smaller information-gathering sources that are posing a threat. Together they can build a profile of each individual that would dwarf anything the government could put together on its own. It's very unsettling.

**What piece of information would you really like to know right now?**

Other than the meaning of life? I would love to get the ultimate formulas for the physical world. If there is a mathematical formalism that allows you to understand physical laws, I'd love to get that. It's a meta-wish. ■

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