

SPRING/SUMMER 2002

STERN*business*

Information Nation



Combatting Strategic Surprises

Financial Secrecy and the New War

Why the Internet Stock Bubble Burst

Baruch Lev Gets in Touch with Intangibles

Cotton's Comeback

Following the events of September 11, one of the most remarkable aspects of our national experience has been the way that Americans from all walks of life have contributed not just money and time, but their intellectual resources. Relief workers flooded into

a letter from the

lower Manhattan from across the country, Pashtun-speaking translators have enlisted in the army, and financial planners and lawyers have provided services for families of the victims. The Stern School responded by providing knowledge.

Perhaps one of the best examples of our ability to offer knowledge as a form of aid has been the formation of Stern Rebuilds. The student-initiated group, comprising faculty, students, alumnae, and local bankers and lawyers, was formed last fall to offer *pro-bono* consulting and advice to small businesses affected by the World Trade Center attacks. In November, Stern hosted a "Back to Business" forum, which was attended by more than 300 business

owners. By December, more than 60 businesses – restaurants, bars, retail shops, limousine services, and professional services firms – had submitted requests for assistance to Stern Rebuilds.

A similar impulse echoes throughout this issue of

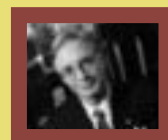
STERN*business*. For in it, we see not only the exceptional range and intellectual imagination of our faculty, but the ways in which they apply their knowledge to contemporary problems. More broadly, faculty and members of the Stern community have contributed to our understanding of the current economic and national security situation, and have offered solutions as well.

I'm confident you'll find this issue as thought-provoking as I did.



George Daly
Dean

dean




STERN*business*

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contents

SPRING / SUMMER 2002



I N F O R M A T I O N N A T I O N

2 An Interview with Dean Daly



Cover illustration by
Michael Gibbs

4 Data Mine by Daniel Gross

6 Sneak Attacks by Joseph Lampel and Zur Shapira



20 DotCom Mania: The Rise and Fall of Internet Stock Prices: by Eli Ofek and Matthew Richardson

32 Department of Information Systems: An Interview with Kenneth Laudon

36 Branding Cotton: How Farmers Cultivate Demand on Madison Avenue

by George David Smith
and Timothy Curtis
Jacobson

14 Secret Agents: Financial Secrecy and the War on Terrorism by Marti Subrahmanyam and Ingo Walter

26 Out of Touch by Baruch Lev

44 Endpaper: The Original Information Superhighway by Daniel Gross

18 Going the Extra Miles by Lawrence J. White



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AN INTERVIEW WITH DEAN DALY

In late 2001, Dean George Daly announced that he would step down as Dean in August 2002 after a highly productive and eventful nine-year tenure. But Daly won't be leaving campus. He will remain in his post for a transition year, and continue to teach "Models of Leadership." In late January, he spoke with Joanne Hvala, Associate Dean of Public Affairs at Stern, about his tenure, his legacy, and his plans for the future.

Joanne Hvala: *Your predecessor, Dean Dick West, had the vision to combine the graduate and undergraduate business schools at the Washington Square campus. How has that decision affected the growth and development of Stern in the subsequent nine years?*

George Daly: The move to the Square has been a huge plus for Stern. It has placed the entire School in the heart of a truly unique neighborhood, Greenwich Village; it has united us with other parts of the University, leading to many productive collaborations; it has given us a much stronger sense of place and community; it has provided us with a physical facility that is one of the best in the country. It's hard to



imagine that we could have made the progress we have had we remained in the old location.

JH: *How does the school's location in New York City affect the learning process?*

GD: The first years of my Deanship involved instituting and imitating best practices of the very best institutions. By the late nineties it was becoming evident that, while that strategy had yielded great returns, we had reached "state

of the art" in most areas and that further progress would require that we increasingly distinguish ourselves from other leading schools rather than imitating them. The purpose of the Strategic Plan was to produce a blueprint for that task.

JH: *In 2000 you initiated a comprehensive Strategic Planning process that brought together all the School's major stakeholders. What are the results to date?*

GD: The plan has three major themes: using New York City as a unique and rich educational resource; universal excellence in all that we do; and a culture that demands excellence and innovation. I think the early returns are most promising. We are using the city in new and remarkable ways — like when our entire first year class spent a day at the Metropolitan Opera learning about the complexity of its operations. Every one of our academic departments has been strengthened. Most important, I think that we have instituted processes and instilled beliefs in our faculty, staff and students that will continue to propel us forward.



JH: *How have Stern students changed in the last decade?*

GD: They've changed in two principal ways. First, people like Associate Dean Mary Miller and Director of Admissions Julia Min were able to recruit some of the best and brightest MBA students. Vice Dean and Dean of the Undergraduate School of Business Fred Choi has also recruited some of the best undergraduates in the world to Stern. The growth in test scores was simply phenomenal. Even more important, though, they instilled in those students a deep sense of pride and commitment.

JH: *The Stern School has many outstanding faculty members, who are especially strong in research. What advantages does this research strength bring to the education process?*

GD: The fundamental premise of a research university is that research and teaching are complementary activities. I deeply believe in this premise. Good research is useful in its own right because it keeps a faculty member and his or her students on the cutting edge. But it also signals qualities of mind that are very important to the long run success of a professor – the ability to assimilate, translate and build on the ideas of others.

JH: *One of your important initiatives was establishing an executive education program. Why did you take that step?*

GD: First, Stern is located in the center of the world's largest executive education market. Frankly, it would seem rather odd if we didn't play a leading role in this market. Second, executive education puts us in constant contact with leading executives and firms. This is an influential constituency that can serve as a "relevance check" for us as well as one with which we can engage in a learning process that is mutually beneficial and supportive.

JH: *Stern prides itself on having a very international student body and faculty. How does that contribute to the educational process?*

GD: Stern was a pioneer in international education long before it became fashionable. This was the result of some pioneering efforts by some exceptional faculty members as well as the School's location in one of the world's great cities. As we have progressed, I think we have learned that the greater the variety of nations and cultures represented in our faculty and student body, the more enriching the educational experience. So we work hard to recruit the best students from around the world and expose them to some exceptional experiences in our School and city and, most important, to each other.

JH: *One of your principal accomplishments has been to boost the amount of private gifts to the School so that the amount raised in the last 10 years surpasses what was raised in the School's previous 90-year history. What have those resources enabled Stern to achieve?*

GD: The progress we have made over the last decade simply would not have been possible without the great financial support we have received. What did it make possible? The move to the Square, the recruitment of so many terrific students, faculty and staff, the initiation of some wonderful and innovative programs, the great expansion in the quality of our facilities and technology. We are competing with a very different set of schools than we were a decade ago. This would not have been possible without our private financial support.

JH: *What do you see as the major challenges facing business education today?*

GD: Education at top business schools has become very expensive. This will encourage other institutions to enter this marketplace and students to seek alternative paths to the relevant skills and expertise. Schools that want to remain at the top will have to seek constant improvement in all of the fundamental dimensions of what they do. Only in this way can

they assure the validity of their "value proposition." Universities are more tradition-bound than most other institutions. Somehow, we must seek a sensible compromise between some of these traditions and the needs of an ever more demanding and competitive marketplace.

JH: *As you reflect on your tenure as Dean of the Stern School of Business, what are you most proud of?*

GD: I'm most proud of the people who I have gotten involved in the School, whether as faculty, students, staff, Overseers, or alumni, and the pride and commitment these people feel about the institution. They are the ones who have propelled the School on its current trajectory and they are the ones who will take it to the very top.

JH: *You have dedicated the last nine years to moving Stern forward by every measure. How will you continue to work for the advancement of Stern?*

GD: I haven't plotted my future in detail but I'd be astonished if it didn't include a strong affiliation with Stern – as a teacher, (relatively young) elder statesman, cheerleader, fundraiser and contributor. I may do some other things as well but I expect New York and Stern to be part of my life for the rest of my life.

An illustration by Michael Gibbs showing a fisherman in a small boat on a sea of binary code (0s and 1s). The fisherman is holding a long pole, and the background is a vast expanse of blue and purple binary digits.

By **Daniel Gross**

ILLUSTRATION BY MICHAEL GIBBS

DATA

Much has been made in recent years of the notion of business as war. In the late 1990s, executives and management gurus took to quoting from Sun Tzu's *The Art of War*. The business press joined in, with headlines about mortal combat in the e-commerce sector, "death-spiral" financing, and trench warfare in investment banking.

In light of the events of September 11, a day on which many people engaged in utterly peaceful business became victims of a new and horrible form of warfare, the metaphors seem remarkably less apt.

Nonetheless, we are reminded that studying past conflicts can help present-day executives improve their management. In their article (p. 6) Zur Shapira and Joseph Lampel argue that lessons learned from the debacle of Pearl Harbor in 1941 can inform the way managers detect or prepare for sneak attacks. After all, they note, "strategic surprises can occur in business as well." The best defense for companies – and for nations as well – is not necessarily a massive physical show of strength or the rollout of a conspicuous deterrent threat. Instead, the authors convincingly

argue, it lies in using and processing information about threats better and more intelligently.

This article aptly sets the tone for this issue of *STERNbusiness*, which focuses on the role, importance, and use of information – in all its forms – in complex management challenges. The focus couldn't be more timely.

For in the current war on terrorism – a remarkably complex global operation – bits and bytes of information are as crucial as horses and crossbows were to combatants in the Middle Ages. Consider the role of money. Today, cold hard cash has essentially been transformed into data – it pulses through global networks in bits of binary code, just as photographs and intelligence analyses do. As seen, this flow can help undermine security. "Just as the terrorists took advantage of our relatively open and porous educational, aviation, and immigration systems to plan and execute their attacks, they also likely took advantage of our financial systems," write Ingo Walter and Marti Subrahmanyam. (p. 14) They argue that as part of the war on terrorism, governments must use financial intelligence to shut down the secret flows of terror-abetting capital.

The events of September 11

have also altered the dynamic between government and the private sector, with industries ranging from hotels to insurance asking for federal help. Nowhere has the interaction been more intense than in the battered airline industry. Larry White offers some intriguing suggestions on how airlines can improve customer relations in this time of crisis and perhaps coax people back to the air (p. 18). The answer lies in the innovative use of frequent flier miles.

In wartime, national resources are the key to a successful effort. Heroic U.S. industrial production in World War II helped set the stage for victory. In this environment, however, information can be a crucial resource – for governments and for businesses. Consider the very term data-mining. It intimates that for companies, information has become as important as coal, gold, or oil.

Tapping into rich veins of data doesn't lead simply to profits or business advantage, it can also lead to enhanced understanding of recent events. In their article (p. 20), Eli Ofek and Matthew Richardson suggest a comprehensive and compelling argument as to why the .com bubble of the late 1990s formed, and why it burst.

M I N E

Contrary to the prevalent view, which lays the blame squarely at the feet of malignant underwriters, hype-prone analysts and failed .coms, Ofek and Richardson conclude that optimistic investors crowded pessimistic investors out of the stocks, leading prices to rise far above fundamental values. When lock-up agreements expired, a crowd of less optimistic sellers flooded into the market, altering the dynamics of a frenzied market. "Without an influx of optimistic new capital to snap up the new supply, the Internet stocks suffered a decline that quickly turned into a rout," they conclude.

Just because the .com investing bubble has burst doesn't mean that information technology's influence on business is over. Far from it. "Now we're in E-commerce II, in which established players are using the lessons learned from the first movers to transform their businesses," said Kenneth Laudon, in an interview that hits on themes from his recently published textbook on e-commerce. (p. 32) Regardless of the vicissitudes of the NASDAQ, Laudon notes, companies will continue to use information technology to redesign their businesses, their markets, and their relationships to consumers.

The fact that information has, in many ways, replaced physical assets as the driver of value, is a theme that Baruch Lev has been developing for years. An expert on the role of intangibles – assets you can see, but can't necessarily touch, such as patents, brands, and organizational structures – Lev has laid out his theories in a new book, *Intangibles: Management, Measurement, and Reporting*, which we are proud to excerpt here (p. 26). Lev argues compellingly that the increasing prominence and value of such information-based assets should lead investors, managers, and analysts to re-examine the way we account for corporate assets and liabilities.

Of course, even in the information age, old-fashioned commodities are still important cogs of the economy. Cotton is one of the oldest, and most historically important to the United States. Throughout the 1950s and 1960s it lost market share to foreign competition and the relentless growth of synthetic fabrics. But in the 1970s and 1980s, as George David Smith and Timothy Curtis Jacobson show (p. 36), cotton growers managed to turn their fortunes around. How? By relying on up-to-date information-based strategies. A brilliantly conceived and executed marketing

and advertising campaign aimed at consumers changed the way people thought about cotton, and research and development helped make the snowy white stuff more appealing to industry. At the dawn of the 21st century, this crucial industry relies as much on favorable weather as it does on the savvy use of information. Staying competitive, the authors note, "requires investment in technology, management, and marketing, and a broad-based knowledge of world affairs, from the weather in Australia to political conditions in Pakistan, from what's fashionable in Paris to what's happening in the world's genetic and biochemical laboratories."

With the decline of the NASDAQ and a slowdown in the growth of technology spending, many pundits have been quick to proclaim that the much ballyhooed information age was coming to an end. For investors soured on the promise of upstart companies, that may be true. But as the wide array of articles in this issue suggest, for executives and managers in industries ranging from cotton to banking, the information age is just beginning.

DANIEL GROSS is editor of *STERNbusiness*.



ILLUSTRATIONS BY MICHAEL GIBBS



Sneak Attacks

By **Joseph Lampel** and **Zur Shapira**

In business, as in war, strategic surprises can prove devastating. But operating at a permanently high level of alert carries its own potentially damaging costs. Savvy managers can occupy a safe and effective middle ground.

History records many instances of deadly strategic surprises. Hitler's invasion of the Soviet Union in 1940. Japan's attack on Pearl Harbor in 1941. The September 11, 2001, terrorist attacks on New York and Washington.

Fatal strategic surprises can occur in business as well, as companies find that customers or clients may switch suddenly from cooperative to predatory behavior.

Like governments, businesses try to defend themselves through deterrence, and by constantly gathering and interpreting information

and intelligence. But guarding against strategic business surprises is difficult, because they are relatively rare. In any given relationship they are likely to happen only once. What's more, in order to estimate the risk of a strategic surprise one must engage in the tricky task of focusing on behavior that is likely to *signal* opportunistic intent.

When companies encounter behavior that deviates sharply from established patterns of interaction, they have to decide whether to terminate the relationship, or regard the unexpected behavior as random or accidental. Because they have to act quickly, companies sometimes

react mistakenly. They might terminate a relationship unwarrantedly – a mistake that eliminates the risk of strategic surprise, but also could end a valuable relationship. Or they might underestimate the risk of opportunism and thus make the firm *more* vulnerable to strategic surprise. We define those mistakes as Type I and Type II errors, respectively.

Also, most companies do not rely solely on *past* behavior when making inferences about the threat of strategic surprise. They also tend to rely on behavioral norms, which constrain opportunism and shape generalized expectations about how



business partners are likely to behave. But since there is also only a small amount of data available on how strongly partners adhere to norms, inference is likely to amplify errors in judging the trustworthiness of partners.

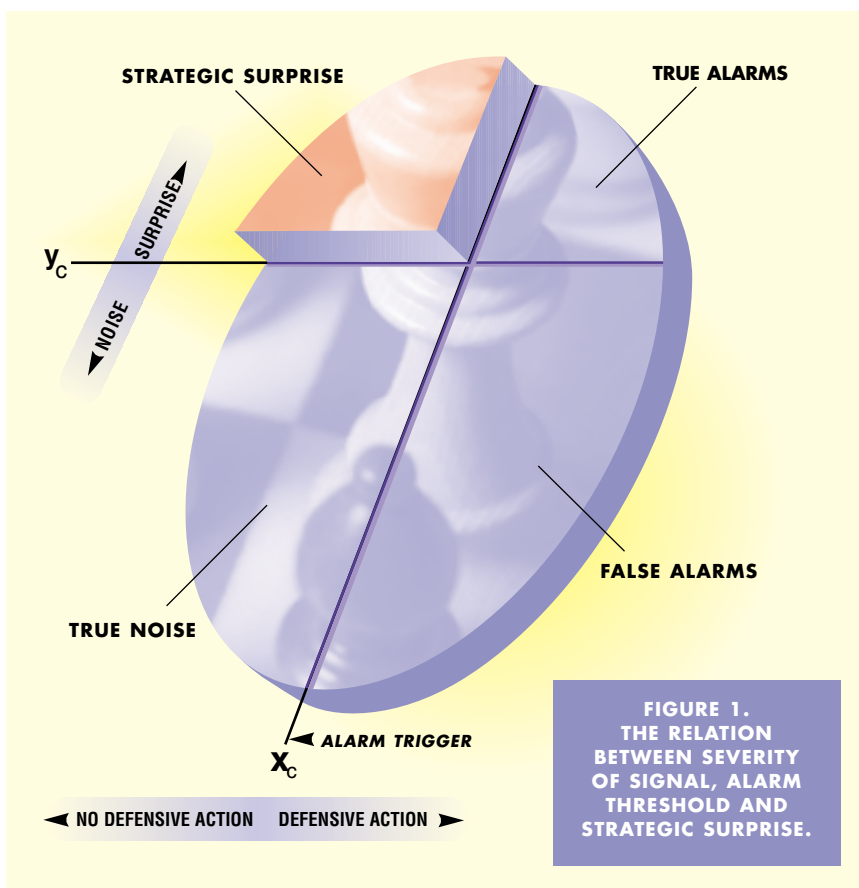
Given these constraints, how can companies guard against strategic surprises while avoiding hasty judgments and maintaining valuable business relationships? The answer lies in using tools and theories from economics, psychology, and sociology.

Judgment and Strategic Surprises: A Model

Strategic surprises occur when an actor switches from behavior that reinforces cooperation and friendliness to one that expresses an aggressive or non-cooperative intent. The surprise results from speed, which allows little time for warning or defensive measures, and from the contrast between assumptions held before the action and the intent revealed by the action. The greater the contrast, the greater the surprise.

Companies try to insulate themselves from such surprises by gathering information and processing it. When they do, executives routinely classify information either as a signal (a legitimate warning) or as noise (irrelevant information). In acting wrongly on these judgments, they may commit errors.

Gathering more information can help reduce – but not eliminate – judgmental errors. And at the time of decision, it is impossible to reduce the probability of one error without increasing the probability of the other. To expand on this point further, we turn to a model that has its roots in Signal Detection



Theory. It is described in **Figure 1**.

The horizontal axis depicts the *severity of the signal* – say the number of delays in fulfilling an order – and whether those involved a potentially low or high cost. Here the input is primarily information. When the severity reaches the value X_c , defensive action is warranted. The vertical axis depicts the *degree of surprise*, which varies with the degree of speed and the contrast between previously held assumptions and revealed action. Here the input is primarily interpretation. Events above y_c are defined as strategic surprises and those below it are regarded as “noise.”

As seen in the grid, there are four possible outcomes: (1) *True alarms* are cases in which precautions are taken that are justified by

subsequent events; (2) *False alarms* are cases in which precautions are not justified by subsequent events; (3) *Strategic surprises* are cases in which no alarm was followed by an event that shows precautions should have been taken; and finally (4) *True noise* are cases in which there are no alarms and no events to suggest that precautions should have been taken.

Looking at Figure 1, it is clear that one can err either by responding to a false alarm (a Type I error) or by failing to interpret the signal properly and falling victim to a strategic surprise (a Type II error).

The challenge for executives and decision-makers, then, is to simultaneously reduce the frequency and cost of both false alarms and strategic surprises. The historical example



of the 1941 Japanese attack on Pearl Harbor illustrates how difficult this can be.

A Date That Will Live in Infamy

In *Pearl Harbor: Warning and Decision*, Roberta Wohlstetter concludes that: "Never before have we had so complete an intelligence picture of the enemy." Before the attack, Japanese codes had been broken, and information from British intelligence, diplomats and journalists was highly accurate. In spite of the constant flow of information pointing to an imminent Japanese attack, American forces were caught entirely by surprise. The surprise is consistent with our model in two respects. Information indicating a Japanese attack led to a series of false alarms, which ultimately undermined vigilance. And, assumptions about the low likelihood of a surprise attack led American intelligence to discount information pointing to an attack.

On three separate occasions – in June 1940, in July 1941, and in October 1941 – information about Japanese intentions led to the declaration of a state of alert in Pearl Harbor. The third alert, on October 16, 1941, directed American commanders to deploy forces in readiness to repel such an attack. When an attack did not materialize, these alerts were seen as costly and disruptive false alarms. By the time the third alert was issued, there was

"On three separate occasions – in June 1940, in July 1941, and in October 1941 -- information about Japanese intentions led to the declaration of a state of alert in Pearl Harbor. . .When an attack did not materialize, these alerts were seen as costly and disruptive false alarms."



a strong tendency to discount warnings and relax vigilance.

Pearl Harbor was also a failure of *interpretation* in the face of powerful evidence. The possibility of a Japanese attack on Pearl Harbor had long been part of American strategic thinking in the 1930s. In April and July 1941 two separate reports *forecast* the Japanese attack in some detail. Nonetheless, the American military discounted this potential outcome because they believed the risks involved (for the Japanese) to be too great.

It is tempting to argue that if American intelligence had been truly excellent, it would have surmised the date of the attack and possibly even the target. But there is always a gap between the informa-

tion available and the information needed for completely accurate prediction. And closing that gap requires not just extraordinary foresight but also a major commitment of resources.

Indeed, reducing the risk of strategic surprise, either by taking precautionary defensive measures or by investing in comprehensive intelligence systems, can be very costly. The Soviet Union discovered that guarding against a surprise nuclear attack imposed crippling and potentially fatal costs. This holds true to an even greater extent for firms that have limited resources at their disposal.

Balancing Dependence Against the Risk of Surprise

The limits of reducing the risks of strategic surprises are especially evident when in businesses *regulated* by non-contractual relationships. In many industries, including automobiles, textiles, publishing, and movies, such relationships are displacing contracts as the main conduit for transactions between buyers and suppliers.

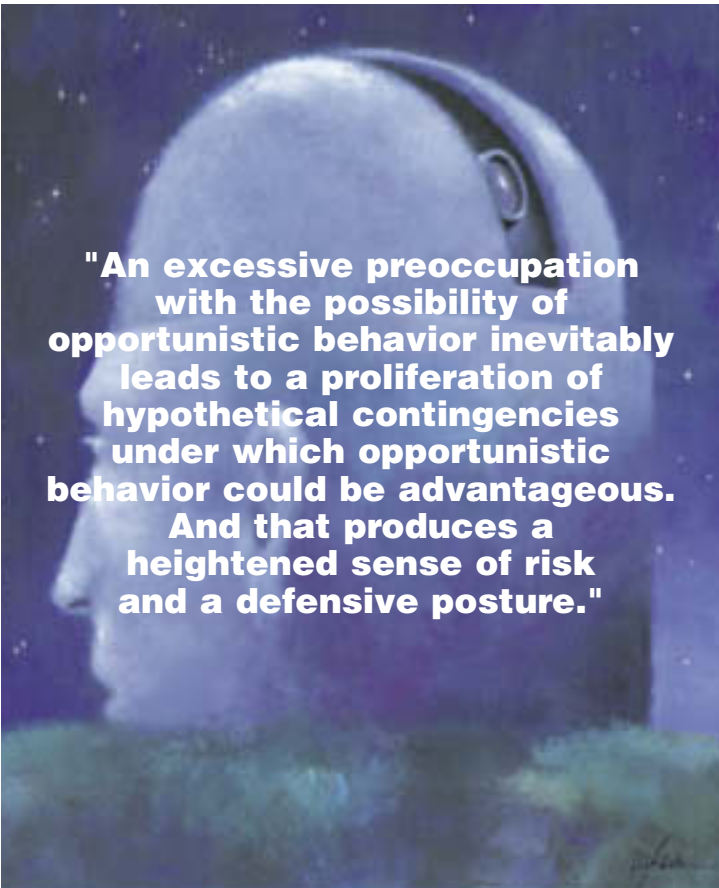
As a stream of orders produces mutual understanding and expectations, the relationships deepen. But these understandings and expectations in turn have important implications for decision-making. Firms are more likely to invest in specialized machinery and production processes if they can rely on future orders from

certain customers, for example.

An excessive reliance on a single partner can open companies up to strategic surprises. In the 1990s, TCI Manufacturing Ltd., a Canadian firm, was the sole supplier of computer cases and power supply systems to Power Computing Corp., which produced Macintosh clones. The relationship was governed by a standard purchasing agreement with a thirty-day termination clause. In September 1997 Apple purchased Power's core assets and its license to manufacture clones for \$100 million. In short order, Power severed its relationship with TCI, forcing the supplier to shutter most of its operations. The prospect of such an outcome haunts all firms in contracting-subcontracting relationships.

In the 1980s, researcher E.H. Lorenz studied how 10 industrial machine-producing firms located around Lyons, France, dealt with such issues of dependence in non-contractual relationships. The firms developed profitable relationships whereby the manufacturers outsourced the production of key components, while suppliers invested in new technology. But this arrangement carried certain risks. The producer ran the risk of late delivery or poor quality parts, and the supplier ran the risk that after it made the costly investment the producer would fail to place sufficient orders.

The obvious way of reducing such risks is to stipulate them con-



"An excessive preoccupation with the possibility of opportunistic behavior inevitably leads to a proliferation of hypothetical contingencies under which opportunistic behavior could be advantageous. And that produces a heightened sense of risk and a defensive posture."

tractually. But drafting contracts is expensive and may foster risk aversion. An excessive preoccupation with the possibility of opportunistic behavior inevitably leads to a proliferation of hypothetical contingencies under which opportunistic behavior could be advantageous. And that produces a heightened sense of risk and a defensive posture.

Instead, Lorenz found that the parties dealt with risks informally, often by making commitments that are intended to build confidence. For example, producers agreed to buy at least 10% of the subcontractor's output but no more than 15%. This meant specialized investment by subcontractors would be worthwhile, but that no subcontractor would be excessively dependent on

a single customer. The subcontractor agreed to invest in new technologies, to be price competitive relative to other suppliers, and to deliver quality components on time. In return, the producers informally guaranteed that they would not instantly drop the subcontractors if competitors were to offer better terms.

The expectations and promises were not always spelled out in contractual language, which preserved flexibility for all parties. But this constructive ambiguity also opens the way for strategic surprises. Confronted with a request for postponement of delivery,

firms will be unsure how to interpret the move. Does the lapse represent a clear signal that the subcontractor is behaving with opportunistic intent? And how late does a late delivery have to be before it deserves close attention?

Answering these questions becomes particularly difficult when an event falls into that ambiguous area in which events are regarded as outside acceptable norms, but not sufficiently serious to require action. And this is the moment when entities become vulnerable to strategic surprises.

False Alarms and Strategic Surprises

During the Cold War, both the U.S. and the U.S.S.R. built immense early warning systems to guard

against surprise, full-scale nuclear attacks. Initially, the greater amount of information that these systems collected reduced vulnerability to surprise attacks. But as the systems became more sophisticated, each side faced a new dilemma. Various innocent activities could be interpreted by an overly sensitive system as the initial stages of an all out attack. So to reduce the risk of launching a false preemptive attack, the superpowers built alert systems that decreased the sensitivity of the system to incoming information.

Let us assume that businesses develop similar early warning systems, with three states of alert. The first state, *green*, represents business as usual. The second state, *yellow*, is characterized by increased vigilance by certain managers directly involved in sales or purchasing. The third state, *red*, denotes a high level of attention on the part of managers, including meetings to decide on what actions are called for. These alerts are similar to the areas marked in Figure 1, where green equals true noise, red equals true alarm, and yellow marks both false alarms and strategic surprise. The yellow alert stage is marked by ambiguity, which must be resolved by a judgmental decision.

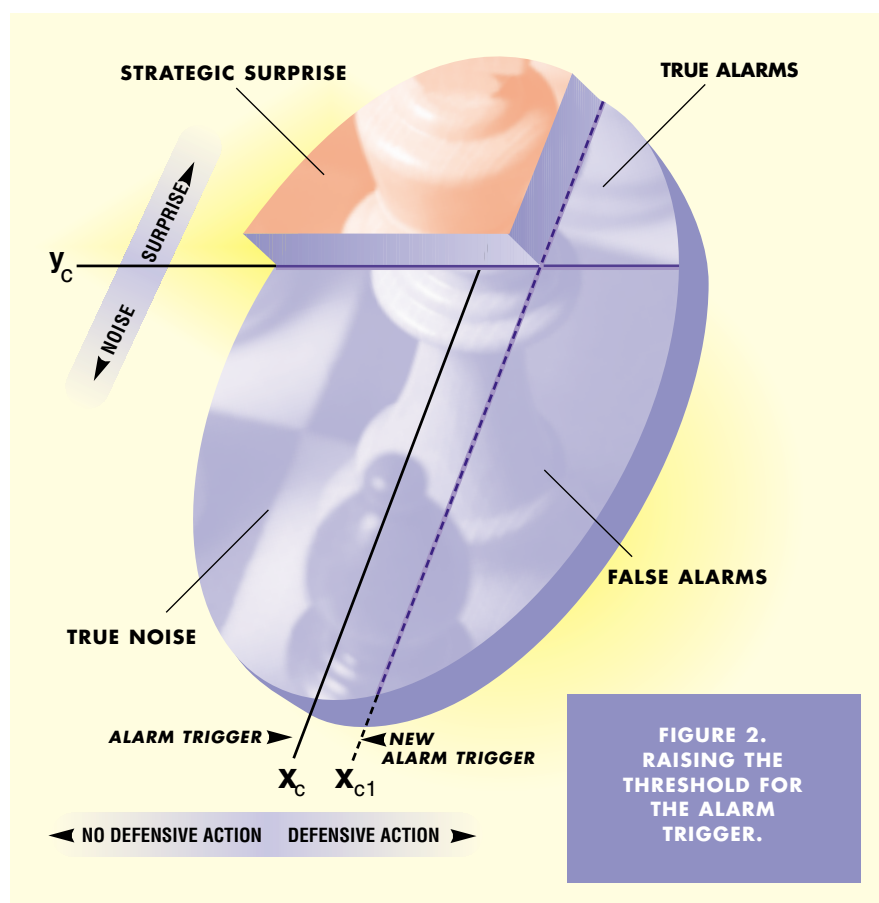
So, should a subcontractor adopt a green, yellow, or red alert status if an established customer reduces orders? The answer depends on where you draw the lines between the three alert states. Let us assume that a subcontractor emulates a Cold War superpower. She sets the yellow and red alerts at relatively low levels during initial dealings with an unfamiliar client. If the client's behavior remains below the

yellow alert level, she will inevitably increase trust and raise the threshold. If a client violates the threshold, this may result in less trust. The supplier becomes more vigilant, and spends more time interpreting cues that previously would have been ignored.

However, the supplier may think that it is the *alert* that is unreliable rather than the client, and therefore decide to raise the threshold level. After all, *lowering* the alert threshold raises costs to managers and organizations. A yellow alert forces key managers to rearrange schedules and priorities, while a red alert may force organizations into costly preemptive actions. And if they believe that the violation of the yellow

low alert threshold is accidental and does not reflect their partners' trustworthiness, they will adjust the threshold upward. This dynamic, illustrated in **Figure 2**, leads us to the following conclusion:

Proposition. *In non-contractual relationships, the estimation of the probability of a strategic surprise is highly sensitive to false alarms. This sensitivity arises from the necessity of inferring the probability of strategic surprise from a small sample of available data on false alarms. In addition, when recent false alarms are associated with high costs, there is a tendency to raise the alarm threshold, thereby increasing the probability of strategic surprise.*





Norms and Strategic Surprises

Competition and cooperation between companies would not be possible without a variety of explicit norms and sanctions that are rooted in legal and regulatory structures. The assumptions, however, are often also informal and tacit. Industries, after all, are social systems in which repeated interactions give rise to informal norms covering areas such as avoidance of price rivalry and mutual forbearance of entry into each other's market.

In dependency producing interactions, repeated interaction can change the basic character of the relationship from a casual arms-length relationship to one of partnership. Lorenz noticed the development of "moral contracts" in some cases he observed, a series of undocumented understandings. And for the most part, the effectiveness of such "moral contracts" depends on relatively ambiguous norms.

Because norms that govern cooperative relationships are structurally more complex, their violations are susceptible to multiple interpretations. A delivery that is late by a day, or a batch that has several more defective parts than usual, can be explained away. A problem arises when we enter the aforementioned *yellow zone*, where delays and defect rates may give cause

for concern. It is at this point that managers often begin to suspect that their partners are only paying lip service to the agreement and may not be truly bound by norms.

Indeed, it is not safe simply to assume that a partner will adhere to norms without also evaluating the extent to which he embraces them. But evaluating the degree to which partners embrace norms as opposed to simply following them is difficult. Decision makers tend to rely on the tendency of norms governing one kind of behavior to be related to norms governing other types of behaviors. For example, it is generally believed that a subcontractor who is willing to make last minute changes to an order without extra charge is likely to embrace norms that constrain taking advantage in other situations. Norms can therefore be regarded as social and cognitive constructs that link different

populations of events.

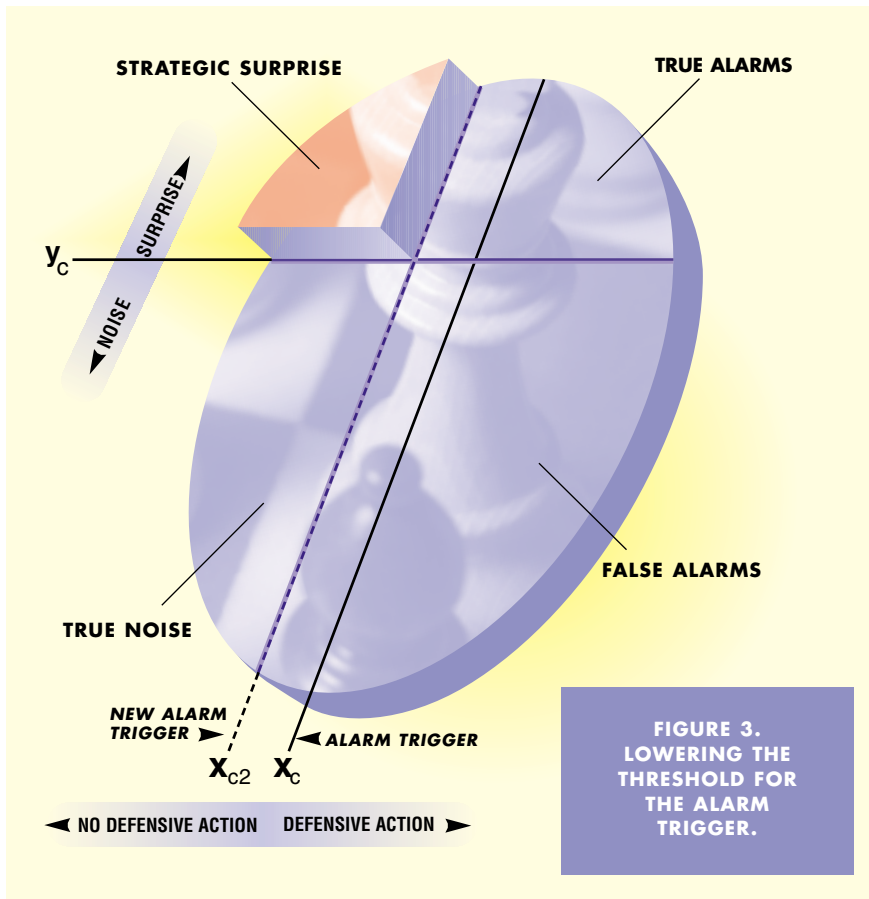
In any industry where norms are in place, norm espousal usually precedes norm adherence. Talking about norms makes it easier to behave according to them. In our terms, norms can be conceived as average behavior resulting from long-term interactions that can provide at times a better guide for behavior than judgment based on a few recent events. This moral grounding is reinforced by the social nature of the interaction. Lorenz found that the friendly language used by the companies he studied, conveyed to subcontractors that "when in doubt they should act as if their actions were guided by the norms of friendship."

Acting "as if" norms are in force is easier if there is sufficient history to suggest that norm espousal is strongly correlated with norm adherence. And this line of reasoning leads us to

two important conclusions regarding norms and strategic surprises. The first is depicted graphically in **Figure 3**. It holds that in industries where norms have developed over a short period of time, firms are more likely to regard behavior that is contrary to norms and expectations as valid indicators of opportunistic intentions. That, in turn, makes them more prone to lower the alarm threshold than firms in industries

"Firms should scrutinize their environments continuously in an attempt to detect changes that may affect their partners' goals and intentions."





in which norms have developed over a long period of time. In other words, when companies move the alarm criterion to x_{c2} on the left, this increases the probability of false alarms, but decreases the probability of strategic surprises.

The opposite problem exists in industries with a longer history of norm espousal and norm conformity. Since there is more evidence to support the belief that norms are in force, there is a greater tendency to conclude that norm following is a strong index of norm embracing. Accordingly, firms place more weight on norms when interpreting their partners' intentions and less weight on recent evidence of potentially opportunistic behavior. This

tendency leads firms to downplay the importance of recent evidence and false alarms. If, in addition, the cost of recent false alarms has been high, firms may raise the level of the alarm trigger. Doing so reduces the probability of false alarms, but also making firms more vulnerable to strategic surprises.

Conclusions

While it is not possible to eliminate strategic surprises, there are potential measures firms can take to reduce their frequency. From an economic perspective, firms should attempt to diversify their dependence on buyers and suppliers so as not to reach an extreme level of dependence. Furthermore, compa-

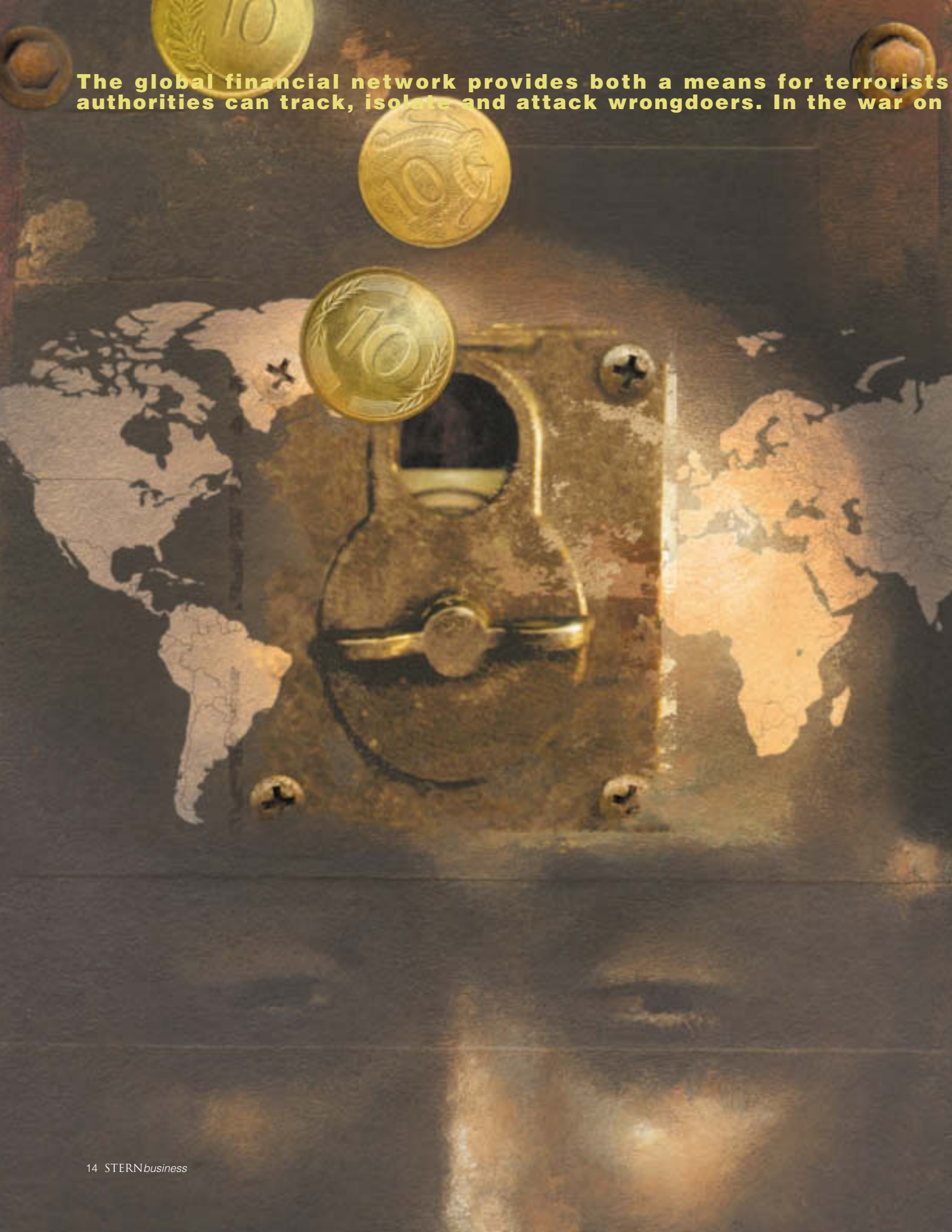
nies should include enforcement costs in assessing the probability of opportunistic behavior by partners. Many relationships are built on legal agreements that can deter predatory opportunistic behavior by partners if they are enforceable, and especially if they are enforceable at relatively low cost.

From a sociological perspective, companies should not rely too much on history in predicting their partners' intentions. Even if historical evidence is systematically collected, it is not a guarantee against potential changes in partners' intentions. Firms should scrutinize their environments continuously in an attempt to detect changes that may affect their partners' goals and intentions. Finally, they should develop a sound process of interpreting the information that is gathered from several different sources.

The global marketplace, like the world itself, is fraught with opportunity and danger. And even the most cleverly designed strategies can leave companies and countries vulnerable to strategic surprise. The challenge for government policymakers and corporate decision-makers is not, then, to eliminate risk – that may prove too difficult – but to manage it.

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**The global financial network provides both a means for terrorists
authorities can track, isolate and attack wrongdoers. In the war on**



to gain resources and an avenue through which law enforcement terrorism, we must also activate troops on the financial front.

Secret Agents: **Financial** **Secrecy** and the **War** on **Terrorism**

By **Marti Subrahmanyam** and **Ingo Walter**

The attacks on New York City and the Pentagon on September 11 set the United States and its allies on a new, and unprecedented, war footing.

Like previous global conflicts, the battle against terrorism will be waged on many fronts. Initially, much of the press and public attention has rightly focused on the military front in Afghanistan. Other crucial theatres of operation received attention as well, including the financial front.



Since September 11, policymakers have focused resources on developing the means to anticipate and prevent such incidents in the future. And across the board, experts and politicians agree that more resources must be devoted to gathering and analyzing intelligence. As a result, the Central Intelligence Agency, the Federal Bureau of Investigation, and military intelligence units are likely to receive greater funding.

Ironically, the discussion has not focused quite as much on financial intelligence. After all, authorities could – and should – use financial systems to cut off the air supply of terrorists. Even though the attacks of September 11 were reportedly carried out on a relatively modest budget – about \$300,000 – they could not have been carried out without adequate and timely funding. And just as the terrorists took advantage of our relatively open and porous educational, aviation, and immigration systems to plan and execute their attacks, they also took advantage of our financial system.

Indeed, there is now plenty of evidence to suggest that terrorists, and those who support them, are using the global financial network as a conduit for funding mayhem. There have been reports of financial support to extremist organizations from businessmen and companies in a number of countries. And one of the more intriguing – and bizarre – trails of the September 11 attacks focused on the unusual activity prior to the attacks in financial instruments such as put options on the stocks of airline and insurance companies. The value of these instruments appreciated considerably as stock market indexes and the stock prices of severely-impacted companies fell after September 11. There

remains a suspicion that some associates of the terrorists were, in fact, aware of the impending attack and its possible financial market consequences.

Regardless of the scope and ambition of their goals, terrorists need financial secrecy to achieve their aims. Of course, virtually all legitimate businesses need financial secrecy as well. In fact, secrecy

"Just as the terrorists took advantage of our relatively open and porous educational, aviation, and immigration systems to plan and execute their attacks, they also took advantage of our financial system."

forms an integral part of the market for all banking and financial services, fiduciary relationships, and regulatory structures. Secrecy is a "product" that has intrinsic value, and that can be bought and sold separately or in conjunction with other financial services. This means that as we activate troops on the financial front, we must distinguish between the need to penetrate the secrecy needed by terrorists from the imperative to protect the financial secrecy needed by other users of the financial system, most of whom are totally legitimate. Since terrorism-related financial flows are most likely a drop in the ocean of legitimate financial flows, they need to be triangulated, attacked and throttled with least possible damage to the financial system as a whole.

The longstanding desire for financial secrecy stems from several powerful imperatives, and the phenomenon has several different manifestations. Personal financial secre-

cy usually remains in substantial compliance with applicable laws and regulations, and in many countries has been well served by long-standing traditions of banking confidentiality. Likewise, business financial secrecy involves the generally legitimate withholding financial information from competitors, suppliers, employees, creditors and customers. Such financial information is proprietary and capitalized in the value of a business to its shareholders.

Other forms of financial secrecy skate closer to the edge of the law. Capital flight normally refers to an unfavorable change in the risk/return profile associated with a portfolio of assets held in a particular country thought sufficient to warrant redeployment of assets. Capital flight may or may not violate the law, but is usually done in secret. Tax evasion – illegally avoiding payment of fiscal levies – is a classic source of demand for financial secrecy, and requires varying degrees of financial secrecy to work. Finally, there's criminal activity. Drug traffickers and smugglers not only accumulate large amounts of cash, but also regularly deal in a variety of financial instruments and foreign currencies. So do gun runners and terrorists. All require ways to launder funds and eliminate paper trails that might be taken as evidence of criminal activity; their ill-gotten gains need to disappear and stay hidden.

Regardless of the motivation, the value of secrecy depends on what may happen if the cover is blown and the probability of subsequent exposure of the parties and transactions concerned. Damage can range from criminal

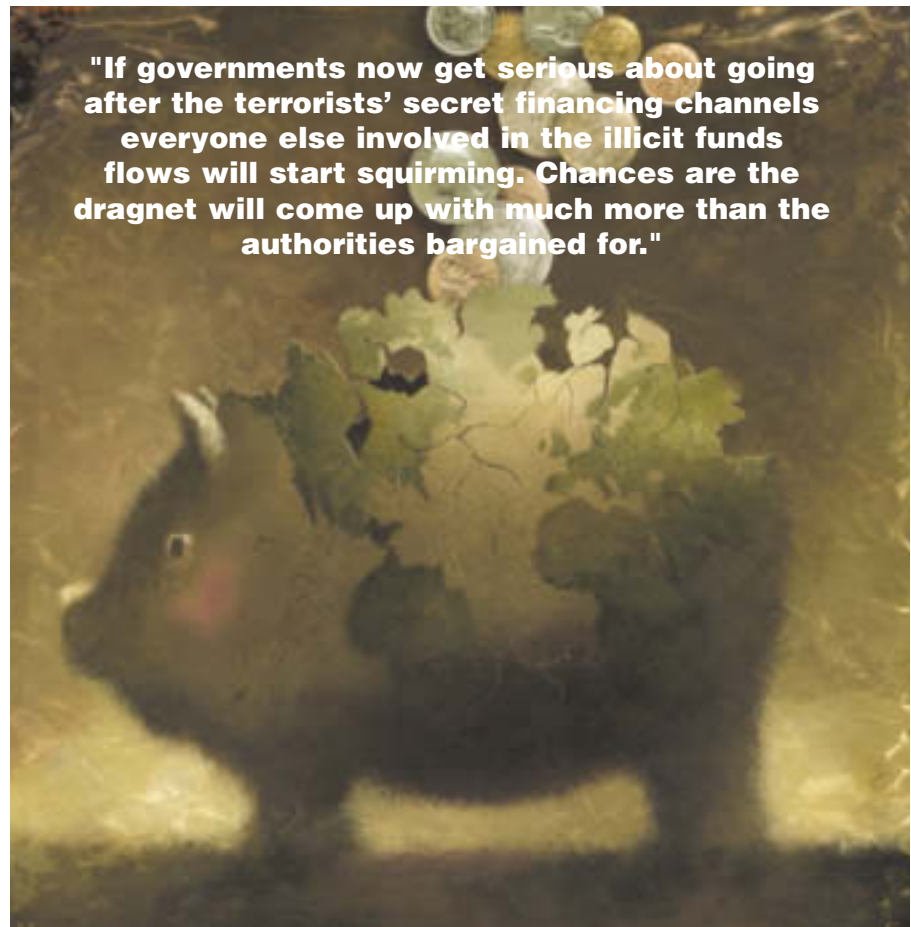


prosecution, exile, and political ostracism to confiscation of assets, fines, taxes and penalties, social opprobrium, and familial tension. The avoidance of damage is what the secrecy-seeker is after. And since damage usually is a matter of probabilities, the attitude toward the risk of exposure is a critical factor in how this benefit is valued. In the case of terrorism, a serious financial system reform can affect these odds and change the perpetrators' attitudes to undertaking such activity.

In order to combat terrorism-related financial flows, we must uncover the financial conduits being used and then close them. This is an admittedly ambitious goal. And it is more than likely that the measures law enforcement authorities and financial institutions employ cannot possibly be granular enough to identify only the targeted flows. Consequently, they are likely to pull in a lot of financial "by catch." Some of these efforts will produce collateral dividends, such as rooting-out criminal financing in the drug business or the illicit arms trade. And some will make tax evasion much more difficult, and improve tax compliance – especially in countries with poorly structured fiscal regimes.

If governments now get serious about going after the terrorists' secret financing channels – and governments have plenty of leverage on banks and other financial firms if they decide to use it – everyone else involved in the illicit funds flows (estimated to be \$1.5 trillion annually) will start squirming. Chances are the dragnet will come up with much more than the authorities bargained for. Secrecy-seekers of the world should fasten their seat-belts!

To be sure, there will be negative outcomes on the financial front. The



new campaign will impose costs on people who want to move funds to less risky political or economic regimes, who want to keep things confidential for business or family reasons, or who simply consider their own financial situation to be nobody else's business. These costs are hard to measure, but they are doubtless significant and have to be considered "collateral damage" in the war on global terrorism.

As always, the trick is to limit that damage by using finely-honed, "surgical" regulatory techniques. Unfortunately, we are in uncharted territory here. So as they design the new anti-terrorism financial weaponry, policymakers must try to devise financial early-warning systems that bolster the public interest

while limiting the adverse consequences.

It is clear that we need to develop techniques that can monitor terrorist activities as well as enforce securities laws and combat drug-related crime. Any anti-terrorism task force certainly needs the kind of manpower, financial and technical, that is fully up to the task and capable of coping with the inevitable unintended consequences. Looking for needles in a haystack rarely leaves the haystack the same.

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Battered by the events of September 11 and the recession, U.S. airlines are ailing. The prescription: coax travelers back to the air by relaxing the rules on redeeming frequent flier miles.

Going the **Extra Miles**

By **Lawrence J. White**

Few industries were harder hit by the terrorist attacks of September 11 than the U.S. airlines. In the weeks after the hijackings, plummeting bookings forced airlines to cancel flights and reduce their carrying capacity by up to 30%. The industry laid off tens of thousands of employees. And even though Congress rapidly passed a \$15 billion package of grants and loan guarantees, the financial outlook is grim.

Almost instantly after the attacks the picture looked dismal for the industry. They were not allowed to fly for four days. And when they could again take to the skies, with airports gradually opening, it was clear that demand would be substantially reduced. Potential passengers were afraid: of flying, of being away from home, of facing long hassles at the airport. Even hardened business “road warriors” were pulling back from their frequent flying patterns.

It was a time for a bold vision and bold actions by the airlines’ senior managements. Instead, their actions were tentative and timid at best.

After some delay, the airlines embarked upon modest efforts to coax their customers to return to the skies. The most common efforts involved some fare promotions aimed at business flyers, plus some extra frequent-flyer miles thrown

in. Also, some airlines eased their requirements for the redemption of frequent-flyer mileage for travel awards – cutting the standard requirement from 25,000 miles to 15,000 for a few weeks.

Such reductions were a good start. But the airlines needed to go much further much faster. From the first day of the resumption of flights, the airlines should have offered flight awards at even lower levels: redemptions of only 10,000 miles, or perhaps even 5,000 miles – a fifth of normal requirements – but valid only for the next month or two. In addition, the airlines should have opened up larger allocations of seats that would have been eligible for the use of these awards. And, of course, they needed to publicize widely these expansive actions.

At first blush, giving away more airline seats would seem like an expensive proposition for the struggling airlines. But this strategy would in fact have carried little cost

and would have brought them considerable benefits. The carriers had far too many empty seats on their flights. If they quickly filled those otherwise empty seats with additional frequent-flyer passengers, the extra costs would have been small – a few more meals and a few more gallons of jet fuel for the additional weight – so long as the extra passengers did not displace paying customers. Given the decline in business travel and the low load factors on most routes, this prospect was not a serious problem.

Now consider the benefits. First, the airlines would instantly have had more customers, who would then have informed their friends and family that it was indeed safe to fly again. That would surely have stimulated greater subsequent demand for paying tickets. Second, the airlines could have reduced – at very small cost – the huge overhang of potential frequent-flyer awards that customers have accumulated



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and that industry analysts have often described as a sizable future liability for the industry. Third, the airlines would have built substantial goodwill and customer loyalty among their customers, many of whom have been frustrated in the past by the unavailability of seats for frequent-flyer award travel.

This strategy would also have produced beneficial effects for related parts of the vacation travel industry, which have also been hard hit. Though these additional travelers would not have been paying for their airline tickets, they would still have spent money on hotel rooms, rental cars, restaurant meals, and taxis while on their travels. The airlines wouldn't have benefited directly from that spending. Nonetheless, it would certainly have earned them additional friends and goodwill – and maybe some additional paying flights – from employees and executives in those industries.

Of course, there were and still are other preconditions for reviving robust air travel in the U.S., such as improved security procedures and reduced airport delay and hassle factors. But stimulating demand has many facets, and radically expanded frequent flyer awards should have been among them.

By now (March 2002) the window of opportunity has closed. Awash in red ink, the airlines have cut back substantially on their flight frequencies and availabilities. With their reduced flight schedules there are fewer empty seats. The opportunity costs of drastically widening their frequent flyer awards have risen, while the likely benefits have diminished.

In sum, September was a time for the airline industry to have been bold and expansive in an area where it was perceived as timid and stingy. By liberalizing frequent flyer reward programs, airlines could have reaped substantial benefits at

quite modest costs. Easing these requirements would surely have been a win-win proposition for the airlines, their customers, their employees, and their travel industry brethren. That's a combination that would have been hard to beat. It's a pity that the opportunity was not grasped.

Perhaps the current senior managements of the industry will survive the current crisis; perhaps not. In any event, some companies, under some brand names, with some managements, using some aircraft will surely be flying in the future as the economy revives and travelers' fears of flying recede. Let us hope that those managements never face as severe a crisis as occurred on September 11. But let us also hope that they will face any future crises with fresher ideas and less restricted outlooks.

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THE RISE AND FALL OF



INTERNET STOCK PRICES

DOTCOM MANIA

By **Eli Ofek** and **Matthew Richardson**

Combine an exciting new technology, a soaring stock market, and masses of highly optimistic individuals investors. Then add an immense new supply of shares offered by somewhat less exuberant owners. What do you get? A stock bubble.

By any measure, the run-up in the price and trading in Internet-related stocks between 1998 and the spring of 2000 was extraordinary. Companies with little revenues and no profits commanded billion-dollar market capitalizations. In February 2000, the largely profitless Internet sector equaled 6% of the market capitalization of all U.S. public companies, and 20% of all publicly trade equity volume. In just a two-year period of time, the entire sector earned over 1000% returns on its public equity. All is well documented now, the .com bubble burst in the spring of 2000 with an eventual decline back to 1998 levels.

Scholars, pundits, and analysts have put forward many explanations for the stunning rise – and

stunning fall – of Internet stocks. But most have failed to get the root of a perplexing question. How did the apparent mispricing of Internet stocks persist in the presence of well-funded, rational investors?

We've got a hypothesis. As prices rose and the bubble was created, the market became dominated by optimistic individual investors, who crowded pessimistic investors out of the market. The shift in investor sentiment created a frenzy of demand for the initial public offerings of Internet-related stocks, which in turn boosted prices to untenable levels. And when so-called "lock-up periods" ended – which meant company insiders were suddenly able to sell portions of their large stakes – a massive new supply of Internet stocks became available for trading. Without an influx of optimistic new

capital to snap up the new supply, the Internet stocks suffered a decline that quickly turned into a rout.

It's a relatively simple proposition, but one that must be backed by data.

Were Internet Stocks Overvalued?

A graph of the index of an equally-weighted portfolio of a universe of Internet stocks and the S&P 500 and the NASDAQ between January 1998 and December 2000 shows substantial divergence in relative pricing. (**Figure 1**).

The data further shows that these higher prices were real – i.e. that substantial amounts of trading took place at such levels. We studied some 400 Internet-related companies between January 1, 1998 to February 29, 2000, the majority of which went public in 1999 and early 2000. While they had

Table 1

| Industry | Aggregate Market cap | Aggregate sales | Agg. Net Income | Industry margins | Target earnings | Target P/E |
|------------------------------|----------------------|-----------------|-----------------|------------------|-----------------|------------|
| All | 942,967 | 27,429 | (9,888) | 0.0568 | 1,557 | 605 |
| Portals | 284,565 | 6,090 | (1,181) | 0.0452 | 275 | 1035 |
| Infrastructure | 100,910 | 2,172 | 13 | 0.0474 | 103 | 980 |
| Infrastructure services | 139,442 | 3,354 | (2,846) | 0.1169 | 392 | 356 |
| B2B Software | 95,617 | 1,219 | (457) | 0.0436 | 53 | 1800 |
| Commerce | 72,675 | 4,459 | (3,565) | 0.0190 | 85 | 856 |
| Consulting | 62,697 | 3,038 | (501) | 0.0436 | 132 | 474 |
| Financial Services | 30,968 | 3,658 | (57) | 0.0927 | 339 | 91 |
| Multi-sector | 53,620 | 192 | 394 | 0.0436 | 8 | 6400 |
| Vertical portals | 43,264 | 2,267 | (1,054) | 0.0558 | 127 | 342 |
| Direct marketing/advertising | 31,278 | 590 | (390) | 0.0436 | 26 | 1216 |
| 11bsb commerce | 27,931 | 390 | (244) | 0.0436 | 17 | 1643 |

All sales, income, and market capitalization figures are in billions of dollars.

an average price (\$56) and average market value comparable to those of non-Internet firms, these New Economy stocks were far more volatile than their Old Economy peers. The average volume per stock in this period was three times higher for Internet firms than for non-Internet companies.

What did the market have to expect in order to justify the high valuations accorded Internet stocks at the height of the .com frenzy? We calculated the aggregate earnings of each of 11 separate Internet-related sectors – portals, b2b commerce, infrastructure, etc. – using Compustat. Because many of these companies had negative earnings, even the aggregate earnings num-

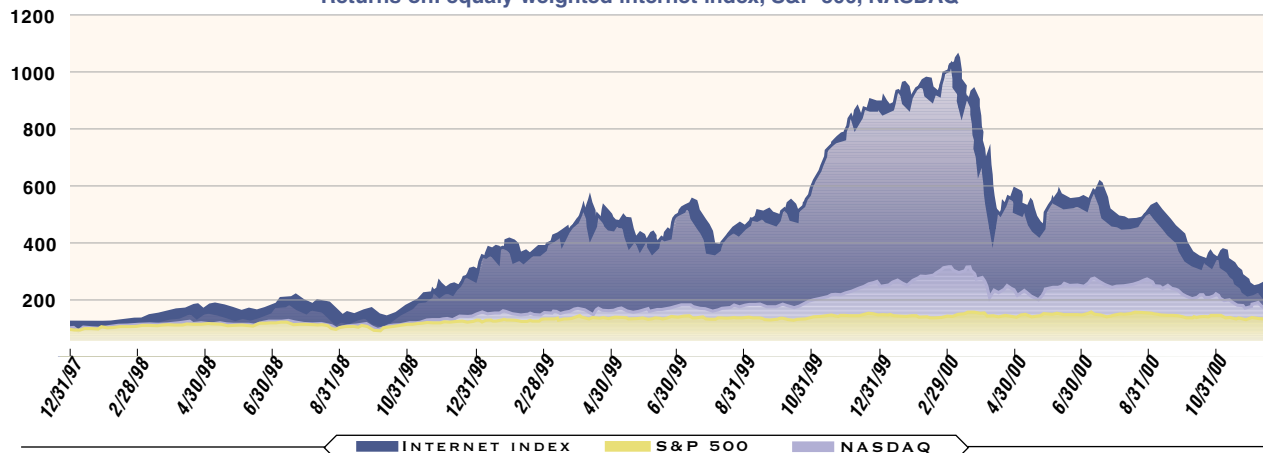
bers were negative. So we measured earnings potential by backing out the implicit earnings of the sector, assuming that the companies in the sector had already achieved income margins of their industry counterparts. The “earnings” were calculated by multiplying aggregate revenues by the assumed income margin. Then, we estimated the price-to-earnings (P/E) ratio by dividing a sector’s aggregate market value by its implicit earnings.

Figure 1 reports the findings for the eleven sectors. To take one example, in February 2000, the 50-company e-commerce sector had an aggregate market capitalization of \$72.675 billion, aggregate revenues of \$4.459 bil-

lion, and net income of negative \$3.565 billion. Using the comparable non-Internet industry margins of 1.9%, we backed out implied earnings of \$85 million, which gave the industry an implied, New Economy P/E ratio of 856. The vast majority of the Internet firms had P/E ratios that were similarly high. Almost 20% of the firms had P/E ratios greater than 1500, while more than 50% exceeded 500.

To grow into such valuations, these companies would plainly have to outperform the overall market by a significant factor. Simply to support an historically high P/E ratio of 20, the Internet sector would need to generate 40.6% excess returns for a 10-year period to justify its current implied P/E ratio of 605. How large is 40.6% for 10 years? When they examined the distribution of earnings growth over a 10-year period from 1951-1998, researchers Louis K.C. Chan, Jason Karceski, and Josef Lakonishok found that the top two percentiles reported growth rates of 31.3% and 22.6%, respectively. Thus, the required growth rates for the entire sector – not just a few individual companies – would have to be between 50-100% higher than the highest 2% of existing firms. By

Figure 1
Returns on: equally weighted internet index, S&P 500, NASDAQ



"By any stretch of the imagination, it would have been exceedingly difficult for these companies to post the sort of growth and performance over the long-term to justify their prices."

any stretch of the imagination, it would have been exceedingly difficult for these companies to post the sort of growth and performance over the long-term to justify their prices.

Who Was Willing to Pay?

So who was willing to pay wildly inflated prices for Internet companies? The answer may help explain why prices grew so out-of-whack in the first place.

We found that, on a relative basis there were more retail (i.e. individual) investors than institutional investors in the Internet sector. In March 2000, institutions held about 40.2% of non-Internet stocks, but only 25.9% of Internet stocks. This strongly significant difference is probably understated, because 1999 and 2000 saw the formation of many Internet-oriented mutual funds, which act as pass-throughs to retail investors. In addition, we found that while in March 2000, the Internet sector accounted for about 4.38% of the aggregate market, such stocks accounted for only 2.38% of pension funds' assets. If more retail investors were in the market than under normal conditions, then one might reasonably argue that the market was more prone to the types of behavioral biases that lead to overly optimistic beliefs.

Public Feeding Frenzies

To further test the hypothesis that optimistic individual investors helped boost prices for Internet-related stocks, we examined the torrent of initial public offerings (IPOs) during the era of .com mania. The first day of trading for an IPO represents the first time the price reflects the distribution of the beliefs across all investors. If overoptimistic investors dominate the market for such stocks, then one would expect them to rise explosively

on the first day.

During the 1998-2000 period, IPOs commanded a great deal of attention among the media and investors. Numerous financial websites focused solely on IPOs, and the standard financial websites included detailed analysis of both upcoming and past IPOs. Between the second quarter of 1999 and the first quarter of 2000, there were a stunning 400 IPOs. Of these, 70% were Internet-related; they raised more than \$33 billion dollars.

It has long been an accepted fact that IPOs are underpriced – they are priced and brought to market in such a way that they are likely to rise in their first trading days. Tim Loughran and Jay Ritter of the University of Notre Dame and the University of Florida, respectively, found that between 1990 and 1998 the first-day return for IPOs was 14%. Between 1975 and 1997, the highest average in any year was 21.2%, in 1995. But when we looked at the sample between January 1998 and February 2000, we found that the mean first-day return on Internet IPOs was 95.5%, with a median of 63.1%. The mean and median first day returns for non-Internet IPOs in this time period were far smaller: 33.6% and 10.4%, respectively.

Between the first quarter of 1999 and the first quarter of 2000, 146 IPO issues doubled in price on the first day of trading. In contrast, over the two decades from 1975-1997, this effect occurred for only a handful of the 6,500 IPOs. These large first-day returns are consistent with a sudden

shift towards optimistic investors. On the first day they could, legions of investors – most of them individuals – who believed the stock was going to go ever higher voted with their wallets.

The Quiet Period

SEC rules stipulate that for 25 days after an IPO, Wall Street underwriters and company executives must refrain from hyping the stock or discussing the company's financial prospects. At the end of this so-called "quiet period," underwriters almost invariably release favorable research reports on the company.

Now, an overly optimistic investor can be characterized as one who basically ignores public information. If so, then one manifestation of this optimism might be the belief that such (utterly expected) news from the research report is new. In fact, Wall Street conventional wisdom holds that retail investors buy – and institutional investors sell – on the release of these positive research reports. Knowing this, institutions tend to buy, and therefore bid up the price of the shares, in the days before the quiet period ends.

Because the date signifying the end of the quiet period was known and publicized in documents and on websites, there should be no price response on average around that date. Instead, investors should incorporate that move into the stock price when it first trades.

We examined the average daily and cumulative abnormal returns for the Internet IPO sample leading up to the end of the quiet period. The daily returns are all positive for the last 10 days of the quiet period, with a cumulative effect of a 13% excess return. By contrast, a sample of non-Internet related firms for the period prior to 1998 turned in just 3.5% in excess returns, or about one-fourth the mag-

nitude of our Internet sample.

How do we explain that differential? Well, if we assume that retail investors are more optimistic than institutional investors, we could conclude that the Internet sector is more prone to quiet period trading. In addition, we found that the average daily volume around on the day before, the day of, and the day after, the quiet period end is 60% higher than in prior days. That finding is consistent with increased buying of the firm's shares on the release of the underwriter's research report.

A Shortage of Shorts?

The increased volume on or around a known, predictable event suggests a greater degree of irrational activity. Of course, while many investors did get carried away, there was always a considerable amount of "rational" capital in the marketplace. And it begs the question. Why didn't such investors deploy their capital against the overvalued Internet sector by selling them short?

Selling short involves borrowing a stock, selling it, and then buying it back later, ideally at a lower price. Now, it is possible that many investors were unwilling to short Internet stocks. After all, mutual funds, which are among the biggest holders of stocks, are generally reluctant to sell stocks short. Researchers Joseph Chen, Harrison Hong, and Jeremy Stein cite work that shows just 2% of mutual funds do so. Hedge funds, which are frequently aggressive traders of stocks, could have been important short-sellers. But the performance and volatility of Internet stocks may have made it difficult for them to do so. Over 90% of Internet firms had a maximum monthly return of more than 80% over the period we examined. Shorting stocks that perform in

"While it is difficult to know what this means precisely about the ability to short on the margin, it is clear evidence that shorting was more difficult for internet stocks."

that manner is an extremely dangerous endeavor.

An alternate explanation may be that it was not possible to short Internet stocks in sufficient volume to bring the prices back down to rational levels. But our investigation shows that this isn't the case. Indeed, in February 2000, short interest – the percentage of the total amount of shares outstanding that are sold short – was considerably higher for Internet stocks than for their corresponding Old Economy counterparts. The mean short interest for Internet stocks was 2.8%, compared with 1.8% for non-Internet stocks, while the median short interests were 1.6% and 0.7%, respectively. In other words, short interest in Internet stocks was nearly *double* that of the typical non-Internet stock.

Limits on Shorting Stocks

There are reasons why the heightened presence of individuals in the Internet stock sector may have made shorting such stocks difficult in practice. First, in order to short a stock, the investor must be able to borrow it. For whatever reason, individuals tend to lend shares less than institutions do. Also, there was no guarantee that the short position would not get called, either through the lender demanding it back or through a margin call.

We aimed to measure the difficulty of shorting Internet stocks by looking at some related data. When an investor shorts a stock, he must place a cash deposit equal to the proceeds of the shorted stock. That deposit carries an interest rate known as the rebate rate. When there is an ample supply of shares to short, the rebate closely reflects the prevailing interest rate. But

when supply is tight, the rebate rate is lower. This lower rate reflects compensation to the lender of the stock at the expense of the borrower, and thus can act as a mechanism to even out supply and demand.

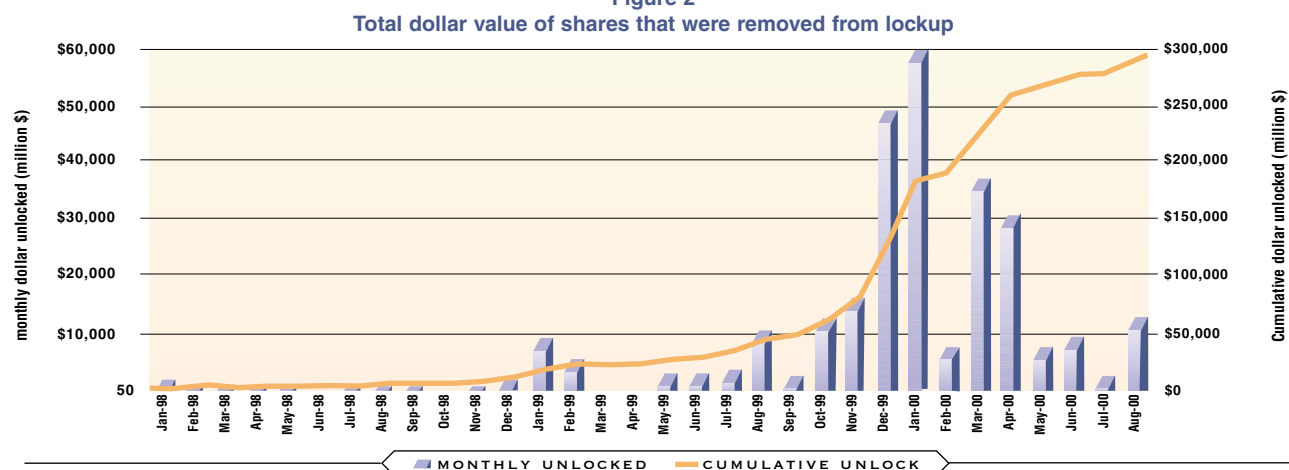
A financial institution, which is one of the largest dealer-brokers, provided us its proprietary rebate rates for the universe of stocks on a selected number of dates. We found that the average rebate rate was approximately 1.08% less for Internet stocks than other stocks. While it is difficult to know what this means precisely about the ability to short on the margin, it is clear evidence that shorting was more difficult for Internet stocks. We also found that there is generally a correlation between the level of short interest and the rebate rate. The higher the short interest, the lower the rebate rate, and presumably the more difficult to find significant number of stocks to short sell.

Who Let the Stocks Out?

So, why did the so-called Internet bubble burst? Given our model, we can think of two possibilities. First, perhaps fundamental news came out about Internet stocks that shocked the beliefs of the optimistic investors. But while there certainly was bad news, we could find no particular single event that could have caused the drop. A second explanation is that perhaps pessimistic investors suddenly were able to short a considerable amount of Internet stocks.

We believe that there is evidence to support this latter explanation – once we realize that shorting stocks and selling stocks have the same economic effect. At the end of 1999 and in the spring of 2000, a large number of investors – insiders, venture capitalists, institutions, and sophisticated investors – were suddenly free to sell

Figure 2



their Internet shares. As the amount of potential selling increased, this new class of investors (whether they were pessimistic or agnostic) began to overwhelm the optimistic ones. The trigger for this selling was the end of the lock-up period.

In an IPO, only a small portion – 15% or 20% – of the shares are sold to the public. The rest remain in the hands of existing shareholders. And in the case of the .coms, these shares were frequently held in larger quantities by venture capitalists, company officers, and employers. Generally, underwriters and such insiders agree not to sell their shares for a given period of time. This so-called lock-up period is one way of aligning the incentives of the current owners and new owners. The majority of lock-up periods last 180 days, or approximately six months, and are stipulated in the prospectus. Thus, the end of a lock-up period is a completely observable event that results in a permanent shift in the amount of available shares in the marketplace. As important, it may represent the advent of a new class of investors and traders who may have different beliefs than the current marginal retail investors.

When we charted **Figure 2**, the dollar amount of shares being unlocked by month and the cumulative effect over the sample period

January 1998 to September 2000, the results are quite striking. By late Spring of 2000, over \$300 billion of shares had been unlocked. As these unlocked shares were eventually sold, there had to be sufficient capital invested by new optimistic investors to support the Internet price levels. After all, the price levels were plainly not justified by the companies' cash flow fundamentals. To the extent some of the \$300 billion in capital was owned by investors who were less optimistic than the marginal individual investors, prices could have been expected to drop as this huge amount of capital worked its way through the market.

From November 1, 1999 to April 30, 2000, the value of unlocked shares rose from \$70 billion to \$270 billion. And what happened to the level of Internet stock prices over this same period? Between November 30, 1998 to November 30, 1999, the Internet index rose from 200 to 830. But while the index still rose over the next several months, it did so at a much slower rate. The slowdown in the rise of Internet prices may have been due to the beginnings of less optimistic investors selling their unlocked shares. And as prices stopped rising, optimistic investors' "bubble-like" beliefs about future prices were also affected, leading to a twofold effect on Internet

prices. The fall of the index from 1030 to 430 from March 1 to April 30, 2000 coincides with the simultaneous increase in unlocked shares. Once the bubble burst, optimistic investors' beliefs were permanently altered.

Indeed, our research showed that after the lock-up period ended on a given stock, there was a downward drift in the price. In many cases, in fact, the drift started even before the lock-up ended. We hypothesize that this may be due to the gradual shift toward pessimistic investors. This post-lock-up drop is not found in previous studies of lockups for non-internet firms. And the decline in Internet stock prices around the lockup expiration is consistent with our hypothesis about the introduction of sellers to the market causing prices to drop.

Our evidence is admittedly circumstantial. But it is nonetheless compelling. The disproportionate number of optimistic individual investors helped drive Internet stocks up to untenable levels. And when the supply of stock available for sale by investors who may not have been quite as optimistic rose suddenly, the results were predictable.

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Out of Touch

By **Baruch Lev**

Factories, stores, and pipelines still have substantial worth. But the assets that create, drive, and preserve value in our economy are increasingly hard to see and touch.

Valuing these new corporate crown jewels accurately requires a new understanding of the past, present, and future of intangible assets.

From time immemorial, wealth has been measured in things that people can touch and see, like King Croesus' gold, or J.P. Morgan's art collection, or Donald Trump's trophy office towers and casinos. And even in an economy powered by bits and bytes, such hard assets still matter. *The Forbes 400* is filled with oil barons, retail magnates, and industrial titans.

But with each passing year, the power of such assets to generate new wealth may be declining. In fact, physical and financial assets are rapidly becoming commodities, which yield at best an average return on investment.

Increasingly, economic wealth and growth lie in, and are driven by, assets that are more intangible – brands, software, patents, business models, organizational systems. If you really want to hit it big in the 21st century, don't head to California in search of gold or oil. Instead, go to Silicon Valley and establish a dominant competitive position, nail down a temporary monopoly, or create a compelling brand – by writing pioneering software, like Bill Gates, or by developing an innovative business model, like Jeffrey Bezos of Amazon.com.

In recent years, intangibles have come to loom ever larger in the consciousness of managers and investors. Unfortunately, when it comes to intangibles, our business infrastructure is behind the times. The traditional accounting system is not equipped to reflect the value and performance of intangible assets. Investors systematically undervalue the shares of intangibles-intensive enterprises, particularly those that have not yet reached significant profitability. The rise of intangibles renders some traditional financial information and metrics less relevant. And the confusion can lead to both increased volatility and the manipulation of financial information through intangibles. The astonishing rise – and even more astonishing implosion – of Enron, a tangible asset (pipelines and power) company that turned itself into a supercharged intangible asset company (bandwidth and energy trading platforms) serves as a dramatic case in point.

There is a great deal of confusion surrounding the use and abuse of intangible assets. And since I've spent portions of the last several years thinking, writing, and talking about intangibles, I thought it would



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be useful to offer a primer of sorts on intangibles.

What are Intangibles?

Merriam Webster's International Dictionary defines intangible as "incapable of being defined or determined with certainty or precision." I believe that intangible assets *can* be defined, but they cannot be determined with certainty or precision. Assets are claims to future benefits, such as the rents generated by commercial property, or cash flows from a production facility. Intangible assets are claims to future benefits that do not have a physical or financial embodiment. Patents, brands, or unique organizational structures – i.e. Internet-based supply chains – that generate cost savings are intangible assets.

Different disciplines use different terms to identify such assets. Accountants refer to intangibles, economist calls them knowledge assets, and management and legal scholars prefer intellectual capital. When the claim is legally secured, like a patent, the asset is generally referred to as intellectual property.

Intangibles are produced through three major methods – discovery, organizational practices, and human resources. The bulk of pharmaceutical giant Merck & Co.'s intangibles was obviously created by Merck's massive and highly successful research and development effort (\$1.82 billion in 1998) aimed at discovering new products. In contrast, Dell's major value drivers are related to its unique organizational design – direct customer marketing of built-

to-order computers via telephone and the Internet. Brands, a major form of intangible assets prevalent particularly in consumer products – think Sony electronics and Coca-Cola – are often created by a combination of innovation and organizational structure.

Intangibles that relate to human resources are generally created by unique training, incentive-based compensation, and collaborative learning programs. Such initiatives can reduce employee turnover, provide incentives to workers, and facilitate the recruitment of highly qualified employees. Xerox's Eureka system, which allows the company's 20,000 maintenance personnel to share information, enhances the value of the human resource-related intangibles by increasing employee

productivity.

Of course, intangible assets are often created by a combination of all three sources. And it should be noted that the lines separating intangible assets and other forms of capital are often blurry. Intangibles are frequently embedded in physical assets (for example, the technology and knowledge contained in an airplane) and in labor (the tacit knowledge of employees).

Why Do They Matter Now?

Intangible assets are not a recent invention. Over the centuries, intangibles were created whenever ideas were put to use in households, fields, and workshops. Breakthrough inventions such as electricity, internal combustion engines, the telephone, and pharmaceutical products have created waves of intangibles.

But starting in the mid-1980s, two related economic forces have driven a surge in the value and importance of intangibles. The first is intensified business competition, brought about by the globalization of trade and deregulation in key economic sectors such as telecommunications and financial services. The second is the advent of information technologies, most recently the Internet. These two developments – one economic and political, the other technological – have dramatically changed the structure of corporations. And a case study of Ford Motor Company, as told in *Forbes*, demonstrates precisely how these two trends have led to a greater focus on intangibles among twenty-first century businesses – and how business observers have come to speak the language of intangibles.



"Unfortunately, when it comes to intangibles, our business infrastructure is behind the times. The traditional accounting system is not equipped to reflect the value and performance of intangible assets. Investors systematically undervalue the shares of intangibles-intensive enterprises."

In April 2000, *Forbes* reported, Ford decided to return \$10 billion to shareholders, "capital that would not be needed by the new, leaner Ford." The company was spinning off its parts plants into a new entity, called Visteon, which would supply Ford. As it shed physical assets, *Forbes* continued, Ford was boosting investments in "intangible assets." It paid \$12 billion over the previous few years to purchase prestigious brand names like Jaguar, Aston Martin, Volvo, and Land Rover. "None of these marquee brands brought much in the way of plant and equipment, but plant and equipment isn't what the new business model is about," the magazine noted. "It's about brands and brand building and consumer relationships." Moreover, Ford was using the Internet to substitute "an outside supply chain for company-owned manufacturing," and to facilitate a "continuous interaction with consumers that offers myriad ways to enhance the brand value." *Forbes* concluded, as it wondered whether

Ford could be the new Cisco, that "decapitalized, brand-owning companies can earn huge returns on their capital and grow faster, unencumbered by factories and masses of manual workers."

The emergence of intangibles – like brands – as the major driver of corporate value at Ford is thus the direct result of the two forces mentioned above: competition-induced corporate restructuring facilitated by emerging information technology.

Ford is not an aberration. Driven by severe competitive pressures, the rapid pace of innovation, and the deregulation of key industries, companies in practically every economic sector started in the mid-1980s to restructure themselves in a fundamental and far-reaching manner. Vertically integrated industrial-era companies, intensive in physical assets, had been designed primarily to exploit economies of scale. But, as Carl Shapiro and Hal Varian note in *Information Rules*, these production-centered advantages were ultimately exhausted and could no longer be counted on to provide a sustained competitive advantage in the new environment.

Companies responded in two ways. One response was to deverticalize – to outsource activities like parts production, or payroll processing, that do not confer significant competitive advantages. The second was to strengthen the emphasis on innovation as the major source of sustained competitive advantage. These two fundamental changes in the structure and strategic focus of business enterprises gave rise to the ascendance of intangibles.



Intangible Linkages and Human Resources

The vertical integration of industrial-era companies is increasingly substituted by a web of close collaborations and alliances with suppliers, customers, and employees. These arrangements are facilitated by information technology, and particularly by the Internet. And they can help produce economies of network, in which gains are primarily derived from relationships with suppliers, customers, and sometimes even competitors. Such network economies can complement and sometimes substitute for traditional economies of scale.

In the industrial era, linkages between different units were mostly physical and relied on tangible assets, like conveyor belts that linked auto parts divisions to railroad networks. Today, the essential linkages between firms and their suppliers and customers are mostly virtual and rely upon intangibles. Examples include Cisco's web-based system of product installation and maintenance; Merck's one-hundred research and development (R&D) alliances; and Wal-Mart's computerized supply chain. These highly valuable intangibles, often termed organizational capital, were not major assets before the 1980s.

The highly connected twenty-first century corporation is also more dependent on its employees than its industrial-era predecessors. Economic developments have considerably weakened firms' control over human resources, as skilled employees enjoy greater alternatives. With easier access to financing, employees have far greater opportunities to leave and start their own companies, or to join other start-ups. Amar Bhidé found in *The Origin and Evolution of New Businesses* that some 70% of the

firms in the *Inc. 500* list – a group of young, fast-growing companies – were established by persons who replicated or modified innovations developed within their former employers. Meanwhile, as University of Chicago professor Luigi Zingales has noted, the expansion of global trade has opened the door for independent suppliers.

The increasing rate of employee turnover in many sectors highlights the deteriorating bonds between employers and employees. Obviously, firms that are able to maintain a stable labor force and reap a significant portion of the value created by employees possess valuable employee-related intangibles. Specific training programs, compensation practices such as substantial stock-based compensation awarded deep down the corporate hierarchy, and efforts to establish entrepreneurial centers within corporations help stabilize the work force. Like organizational capital, such employee-related intangibles were not prominent in industrial-era enterprises.

The Urgency to Innovate

Innovation has always been an important activity of both individuals and business enterprises. The prospects of abnormal profits or monopoly rents, protected for a certain period by patents or "first-mover advantages," have always provided strong incentives to innovate, whether it was Thomas Edison and Edison Electric in the 1880s or Bill Gates and Microsoft in the 1980s.

The difference between then and now is the urgency to innovate.

Given the decreasing economies of scale and ever increasing competitive pressures, innovation has become a matter of corporate survival. Accordingly, there has been a sharp increase in the number of professional workers engaged in innovation. As shown in **Table 1**, during the first 70 years of the twentieth century the number of creative workers rose by 2.4 million; during the next thirty years the number rose 5 million. Note also the corresponding increase of creative work-

TABLE 1 Professional Creative Workers, 1900-99

Units as indicated

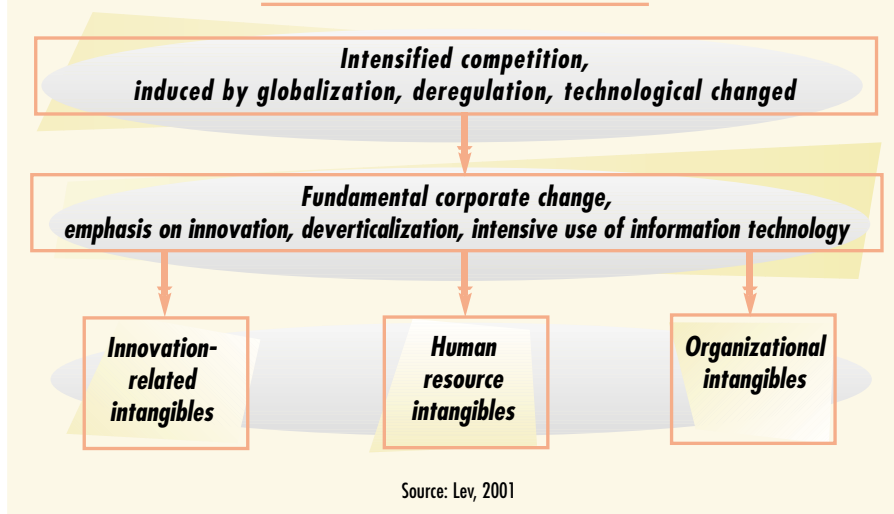
| Year | Professional creative workers (millions) | Proportion of all employment (percent) |
|------|--|--|
| 1999 | 7.6 | 5.7 |
| 1990 | 5.6 | 4.7 |
| 1980 | 3.7 | 3.8 |
| 1970 | 2.6 | 3.3 |
| 1960 | 1.6 | 2.3 |
| 1950 | 1.1 | 1.9 |
| 1900 | 0.2 | 0.3 |

Source: Leonard Nakamura, "Economics and the New Economy: The Invisible Hand Meets Creative Destruction" Federal Reserve Bank of Philadelphia, *Business Review*, July-August 2000, p.17.

ers in proportion to all employees, from 3.8 % in 1980 to 5.7 % in 1999.

Many nineteenth- and early twentieth-century innovations were made by individuals and were subsequently developed by corporations – the telephone, electricity, and the television, to name a few. But in the past 50 years, innovation became a major corporate activity. In 1998, U.S. corporate expenditures on R&D, one of several forms of investment in innovation, reached \$145 billion. Even in traditional industries, success and leadership can now be secured only by continuous innovation. Wal-Mart, with its state-of-the-art inventory management system, and Corning, which trans-

FIGURE 1
THE ASCENDANCY OF INTANGIBLES



lated expertise gained in producing housewares into producing fiber-optic cable, are prime examples of this trend.

The new products, services, and processes generated by the innovation process (new drugs, automatic teller machines, Internet-based distribution channels) are the outcomes of investment in such areas as R&D, acquired technology, and employee training. When such investments are commercially successful, and are protected by patents or first-mover advantages, they are transformed into tangible assets creating corporate value and growth.

Who Should Care?

There are several groups of professionals who should take a particular interest in the implications of the rise of intangibles. They include:

Corporate managers and their shareholders. Evidence indicates that intangible investments are associated with excessive cost of capital, beyond what is called for by the higher-than-average risk of these investments. The excessive cost of capital, in turn, hinders investment

and growth.

Investors and capital market regulators. Research has documented in intangibles-intensive companies the existence of an above-average gap in information about firms' fundamentals between corporate insiders and outsiders. Economic theory suggests that such large and persistent information asymmetries between parties to a contract or a social arrangement lead to undesirable consequences, such as systematic losses to the less informed parties and thin volume of trade.

Accounting standard setters and corporate boards. Empirical evidence indicates that the deficient accounting for intangibles facilitates the release of biased and even fraudulent financial reports. This should obviously be of concern to the Securities and Exchange Commission, the Financial Accounting Standards Board, and to corporate board members who rely heavily on accounting-based information to monitor managerial activities.

Policymakers. The various intangibles-related deficiencies in

financial information adversely affect public policymaking in key areas. These include areas of fiscal policy like the research and development tax incentive, the optimal protection of intellectual property, and the desirability of industrial policy.

The Future of Intangibles

In the wake of the sagging stock market, the current recession, and particularly Enron's debacle some critics have been quick to proclaim the end of the New Economy, which was built, in large part, on intangibles. Since I never joined the New Economy-Information Revolution fan club, I do not feel compelled to participate in the current soul searching brought on by the bursting of the technology bubble. I am concerned, however, that intangibles – to which I have devoted much of my research and professional activities in recent years – will be swept by the tide of disillusionment and ridicule surrounding the New Economy.

I am concerned that people will lump together the permanent phenomenon of intangible investments as the major source of corporate growth and value with transitory economic downturns, stock market volatility, and the financial difficulties currently encountered by certain technology sectors. And that the exaggerated, often unfounded claims about technological revolutions and new business models, now in disrepute, will overshadow real and fundamental economic developments in which technological change and innovation, ushered by intangible investments, play such a major role.

But the trends that have powered the growth in intangibles – global competition and increases in the use of information technology – have not been negated by the bursting of the .com bubble. Surely, the rate of

intangible investment may be affected, to some extent, by economic circumstances and capital market conditions. But intangibles will remain central to corporate success, economic growth, and the enhancement of social welfare – whether the NASDAQ is at 2000 or 6000. Pharmaceutical and biotech companies will continue to direct most of their resources toward intangible investment in scientific discoveries and drug development; chemical companies will continue to devote significant capital to develop new products. Retailers with their razor-thin margins and transparent prices will create value by expanding online operations and instituting improved supply chain processes. Financial institutions will grow mainly through creating new products and improved customer relations. Old Economy or New Economy – it doesn't matter which – an enterprise's competitive survival and success will primarily depend on smart intangible investments leading to innovation and effective commercialization. Economic slowdowns and capital market declines do not change these fundamentals.

What is changing, though is the urgent need to gain a thorough understanding of the role of intangible capital – along with tangible and financial assets – in the process of value creation by business enterprises, to improve managerial processes for coping with the idiosyncratic challenges posed by intangibles, and to develop measurement and valuation tools for both managers and investors. In the fall of 2000, an article by *New York Times* columnist Paul Krugman may have articulated the central challenge facing us: "The intangibility of a company's most important assets makes it extremely hard to figure out what the compa-

ny is really worth."

In the booming economy and roaring capital markets of the 1990s, crude measurement and valuation models could be tolerated, at least for a while, and speed and agility carried the day. But in today's environment, with its slow-growth economy and stagnant capital markets, managers and investors must adopt different mindsets when it comes to intangibles.

Managers must pay meticulous attention to corporate resource allocation. In particular, they should develop the capability to assess the expected return on investment in R&D, employee training, information technology, brand enhancement, online activities, and other intangibles and compare these returns with those of physical investment. Managers should also continuously monitor the efficiency of intangible asset deployment. Licensing patents, for example, may not be a top priority when earnings are ample, but they can be an important source of income during periods of slow growth. Human resource practices, such as incentive-based compensation, require careful planning and monitoring when the going is tough. At this time, most business enterprises simply do not have the information and monitoring tools required for the effective management of intangibles.

Investors must change their mindset, too. Superficial investment analysis with a focus on short-term corporate earnings will no longer suffice in a volatile but generally flat stock market. The crude valuation models currently used by most analysts lack the capability to provide early warning signals of impending problems and will have to be

"Given the decreasing economies of scale and ever increasing competitive pressures, innovation has become a matter of corporate survival."



replaced by an in-depth analysis of the enterprise's business model, with a focus on the capacity of the firm to learn, innovate, and secure maximum benefits from products and services. A continuous assessment of managers' deployment of intangible and tangible resources will have to precede and underlie the current prediction of next quarter's earnings.

In short, in this climate, I foresee a need for both managers and investors to pay more, rather than less, attention to intangibles. In doing so, The emphasis, however, should shift from superficial clichés like the New Economy to serious analysis of the economics of intangible assets and their role in corporate value creation and the enhancement of social welfare. It is now time to move from exclusively dealing with "low-hanging fruit," such as patent licensing and intranet systems, to the full incorporation of intangible capital in the managerial strategic and control processes; and from essentially ignoring key intangibles (human resources, in particular) in the analysis and valuation of investments to fully recognizing their role in corporate value creation.

BARUCH LEV is Philip Bardes professor of accounting and finance at NYU Stern and chairman of the Vincent C. Ross Institute of Accounting Research. This article is adapted, with permission, from his book, *Intangibles: Management, Measurement, and Reporting* (Brookings Institute Press).

Department of **Information Systems:**



an interview with **Kenneth Laudon**

With the NASDAQ down and Internet companies struggling from Silicon Valley to Silicon Alley, it's tempting to bury the much-touted digital revolution. We shouldn't, says Kenneth Laudon, author of a new textbook on e-commerce. Information technology is still transforming the way people manage, work, and consume.

Kenneth C. Laudon is professor of information systems at Stern. A graduate of Stanford University and Columbia University, he joined Stern's faculty in 1982. Since then, he has taught courses on e-commerce, managing the digital firm, IT and corporate strategy, and the links between technological developments and society. Laudon is the author, or co-author, of a dozen books, including the most widely adopted textbook on Management Information Systems in the world. His latest volume, *E-Commerce: Business, Technology, Society* (co-authored with Carol G. Traver) was published in January by Addison-Wesley. In this book, Laudon uses case studies to chart the development and spread of digital commerce in the global economy, primarily by examining cases of U.S.-based Internet firms. Two years after the Internet bubble burst, Laudon believes that the information technologies that inspired the .com mania of the late 1990s continue to influence businesses large and small. And while the seeming obsession with e-commerce may have subsided somewhat, he believes the trends and forces that underlie it are as potent as they were when the NASDAQ soared above 5000. In an interview with *STERNbusiness*, Laudon discussed these and other provocative issues raised in his book.

STERNbusiness: *Why did you decide to write this textbook?*

Ken Laudon: I taught an e-commerce course for three years at Stern. It's a difficult course for most professors because there is no single discipline behind it. E-commerce is a technology story, it's a marketing channel story, it's obviously about finance, and it is also obviously about management and entrepreneurship, not to mention legal and social issues. When a publisher asked if I would like to write a book about this material, I thought it would be a good way for me to deepen my knowledge of the field and help my students understand a very complicated story.

SB: *Did you believe there was a dearth of good material?*

KL: There were no solid textbooks, and materials were spread all over the Web. And much of what had been written about e-commerce was not well grounded in empirical fact. Many proponents of e-commerce seemed to be speaking a private language, filled with hype. Writing this book was an effort to clarify the discussion of e-commerce for myself, my own students, business professionals and, ideally, for other professors. As it ended up, the book is a critical but sympathetic essay on the recent past of e-commerce, and a hopeful but well-grounded description of the near term future of e-commerce.

SB: *Many textbooks rely on case studies. So does this one. Was that a difficult approach given the short history of e-commerce companies, and the failures of many prominent e-commerce companies?*

KL: The book is extraordinarily case driven. There are 14 chapters, and there are five cases in each chapter, and an additional 16 "e-commerce in action" cases that provide detailed financial and strategic analysis of e-commerce firms. For our case studies, we only chose publicly held companies and relied heavily on SEC data to analyze the operating results and balance sheets over a three-year period. We use a very commonsensical, straight-forward analysis with these companies

SB: *Do you differentiate between stages of development in e-commerce?*

KL: Yes. The book identifies two periods: E-commerce I and E-commerce II. Our book is about E-commerce II. E-commerce I covers the period from 1995 to March 2000. It was characterized by explosive growth of Web sites, the formation of thousands of e-commerce companies, the spread of new technologies, new business models and strategies. There was also new corporate and financial behavior that challenged existing legal and social norms, especially in the areas of intellectual proper-

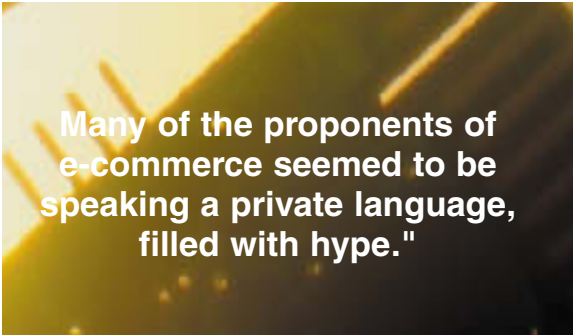
ty, privacy and financial reporting. For economists, this period was very exciting. They saw these developments as the harbinger of nearly perfect markets. And we began to hear the now familiar buzzwords like "friction-free markets," "perfect information," "price transparency," "disintermediation," and "first-mover advantages."

SB: *These predictions seemed to break down first with the online, pure-play retailers. What went wrong?*

KL: There were basically two reasons why it didn't work in retail. The first was that the costs of building a national brand and the information technology infrastructure were just so much higher than what everybody figured. On the revenue side, the numbers of customers willing to pay reasonable prices was greatly overestimated. So these companies ended up with costs that far exceeded revenues. And the whole thing ran for five years because of one of the largest investments of venture capital in American history. Much of that investment – about \$200-300 billion – is now gone.

SB: *Is all the news from E-commerce I bad?*

KL: No. It was a tremendous technological tour de force, and the e part, the electronic or digital part, really did work, and continues to work. There's a lot of long-haul fiber-optic cable installed, a lot of computing horsepower deployed, and a huge global network. These are lasting legacies, and E-commerce II will use these assets to great advantage. Secondly, this first period represented a tremendous outpouring of entrepreneurial and innovative behavior. This peri-



Many of the proponents of e-commerce seemed to be speaking a private language, filled with hype."

od created entirely new distribution channels. In the retail area, it is worth about \$60 to \$70 billion a year. And on the industrial side, it's worth about \$900 billion annually. Taken together, that's about 10% of the GNP that courses over the Internet each year, and it continues to grow. Recent studies put the impact of the Internet on productivity at about 1/4 to 1/2 a percent that in a decade will translate into several thousand dollars in additional income for the average American.

SB: *And what defines E-commerce II?*

KL: E-commerce II starts in January 2001. It is being defined by existing name brand companies who have the brand, the customer lists, the business relationships, and the supply chain and fulfillment infrastructure to operate successfully in a digital environment. These firms using the Internet infrastructure in combination with their existing expertise stand a chance to make real money in e-commerce. In retail, we're talking about Land's End, L.L. Bean, Victoria's Secret, Wal-Mart, Sears and J.C. Penney.

SB: *What did they learn from the early period?*

KL: Well, at first many of them were just fearful that if they didn't move quickly, they would be left behind. Some of them then tried to get into it directly and failed. Wal-Mart had a series of failures. But by 2000 they became convinced that this was a fast-growing chan-

nel, and that they should make substantial investments. When they saw the dot-coms fail a lot of senior executives became more and more confident that they could move some of their


catalog operations and other direct sales lines onto the Web. Wal-Mart and Sears were advantaged because they had warehousing and distribution systems that could be leveraged to the Web. Lands End and L.L. Bean were advantaged because they had an existing order entry and fulfillment operation. In other words, established firms could leverage their existing businesses to the Web for a much lower cost than a startup could build a parallel infrastructure.

SB: *So far we've spoken mostly about retail. What other sectors are important and have survived E-commerce I?*

KL: Services will be strong on the Web. Travel services, like Travelocity and Expedia are both in the book, and they both either break even or turn small profits. These businesses are beginning to scale – as traffic picks up revenue grows faster than costs. That has proven to be a very successful business model. Another area is career services like Monster.com and Hotjobs.com. Finally, financial services companies like E-Trade are likely to be profitable. And there's always E-Bay.

SB: *Are investors and analysts still valuing the surviving e-commerce companies using different criteria?*

KL: Yes. Yahoo! comes to mind. Now there's a company that was profitable, then experienced some losses, and its price-to-earnings (P/E) ratio is still pretty high. But people are willing to pay that high



"We have to get on with the fact that this is basically becoming a digital economy with digital firms and digital marketplaces, and we will spend the rest of this century working that out."

price. For many of these companies, the stock prices have fallen sharply, there are still no earnings, but the companies have consolidated their positions in the market, acquired competitors, and are developing strong brands. WebMD comes to mind. There is still a significant growth premium that people are willing to pay for these companies.

SB: *So what comes after E-commerce II?*

KL: There is no doubt there will be an E-commerce III, but for now until 2005 E-commerce II will focus on making the technologies and business models developed in E-commerce I into profitable enterprises. We have to get on with the fact that our economy is becoming a digital economy with digital firms and digital marketplaces, and we will spend the rest of this century working that out. There will be spurts of growth driven by new technologies, and there will be contractions. For now we can safely say that we have a better understanding of digital technologies, we understand better the business risks and opportunities, and we have begun to focus more on how to make these online ventures profitable. We did learn from E-commerce I, admittedly at great cost.

SB: *Many have argued that the delays in rolling out broadband Internet connections to homes and offices has stunted the development of e-commerce firms. Do you agree?*

KL: I think that that argument doesn't hold any water. That would presume that the failure of many online retail and service firms was caused by absence of bandwidth, especially in the last mile. But for the most part, the

technology worked. That was one of the beauties of the Web that it could scale so easily by adding bigger servers and bigger pipes. But in certain sectors where bandwidth demands are particularly high, you could make that argument – in content for instance. For example, we might have seen an earlier roll-out of Hollywood feature films available through pay-per-view over cable modems or even DSL. AOL Time Warner, Disney, and Vivendi are building alliances with cable firms for Internet delivery of feature films and they are currently held back by the slow growth of home broadband connections. But outside of the content and entertainment areas the solution to the problems of many e-commerce companies isn't more bandwidth. The solution is to charge people more money for what they buy on the Web so companies can cover their costs, and to keep reducing costs by building infrastructure for supply chain and fulfillment operations.

SB: *Has student interest in e-commerce declined?*

KL: I've been here for 20 years, and I've always taught digital commerce and e-business. We just didn't call it that. In the IS Department we have always taught about how digital technologies were going to change the way people run companies and markets. We had an explosion in demand in 1998 and 1999, and business schools responded by rapidly expanding courses and whole new programs. Enrollments at some schools may be lower now than

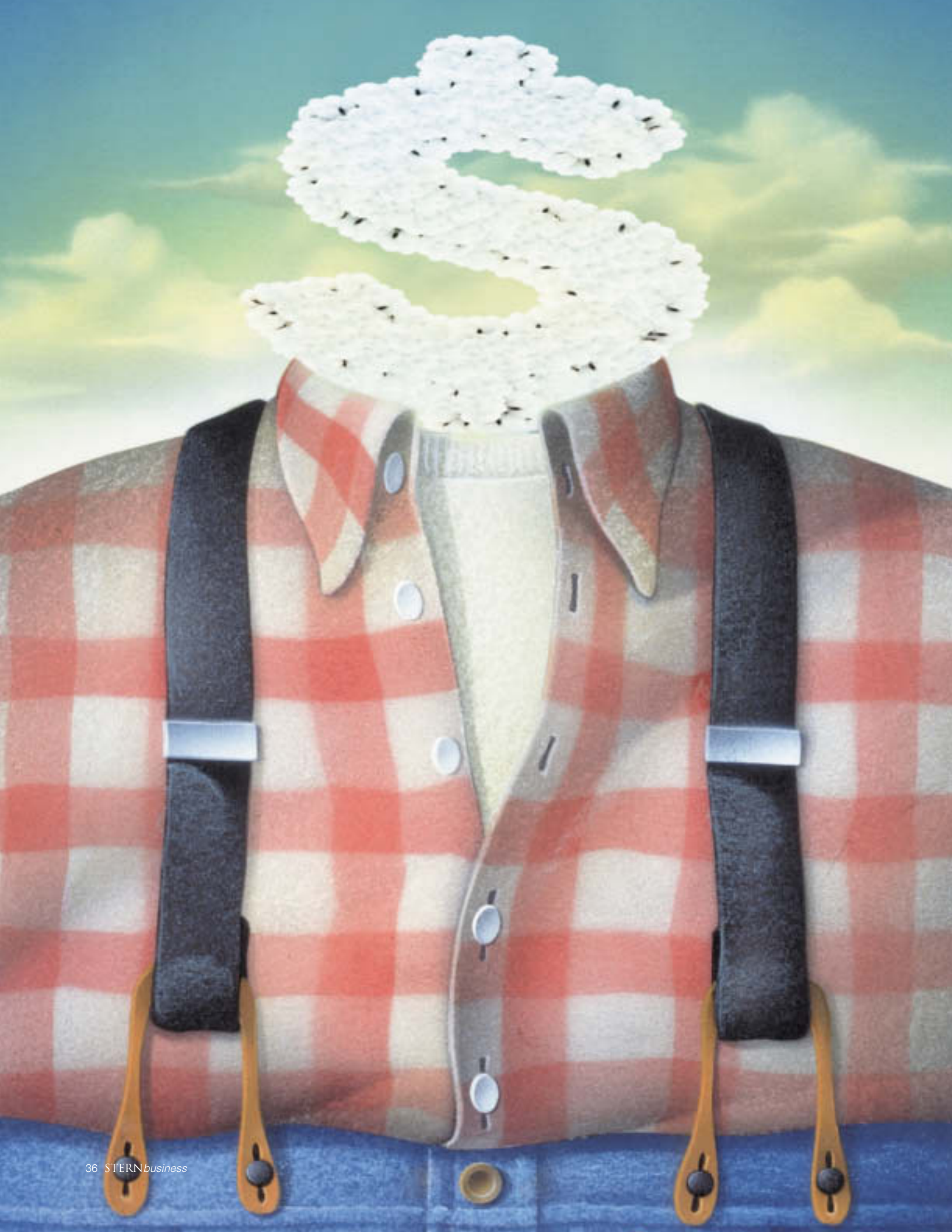
these early, unusually high enrollments of the last two years, but from what I've seen around the country, enrollments in e-business, e-commerce, and management information systems

courses are stable, or perhaps slightly up because student populations are up. Look, if you want to talk about what's happening in the next century, you have to talk to students about digital technology – especially if they want to work for a Fortune 1000 company. It is those companies that are building E-commerce II, and they want to hire managers who know what this is all about.

SB: *What do you want people to take away from this book?*

KL: They learn that we just lived through the first 30 seconds of the e-commerce revolution. It was a hell of a ride! There's more to come, a lot more, but probably along a more reasonable development path of fast growth but not speculative growth. People learn there are many successful (i.e. profitable) e-commerce firms, and many more that are close. Significant permanent structural changes have occurred in some industries, and more industry change will occur in the next five years. And people learn once again that it can be better to be a follower – even a slow follower – rather than an entrepreneur. People learn to look at the numbers when evaluating the long-term survivability of firms. And as Enron taught us, our book also teaches people to look at the accounting rules and business practices that generate the numbers.

KENNETH LAUDON is professor of information systems at NYU Stern.



BRANDING COTTON:

In the 1960s, the declining U.S. cotton industry grappled with stiff competition from synthetic fabrics, competitive international markets, and an outdated image. An unlikely alliance between rural growers and urban admen helped restore American cotton to its historic prominence. The co-authors of a new book about cotton's comeback spin a compelling yarn.

Cultivate How Farmers Demand on Madison Avenue

By **George David Smith** and **Timothy Curtis Jacobson**

Cotton was the miracle fiber of the nineteenth century, when textile manufacturing was the high-tech, high-growth business of the day. Like all farm products, cotton was subject to the vagaries of the weather, pests, and political risks, but for decades it sold into fast growing and weakly contested world markets. On the eve of the Civil War, cotton was “King”. Compressed in dirty white bales, upland cotton from the American South was the developing nation’s largest export, earning the lion’s share of its foreign exchange. It provided the “satanic mills” of England with 92 percent of their supply, and fueled the heart of industrial enterprise in the American Northeast.

One hundred years later, 300,000 American cotton growers (cotton farmers are “growers”) were beset with severe threats to their livelihoods. As the crop’s cultivation had gradually expanded throughout the world, U.S. cotton had lost ground in the global market. At home, in their biggest market, man-made textile fibers – rayon, nylon, and polyester – had launched a fear-

some assault on cotton’s fabric and apparel business. Synthetics producers were giant corporations, and had the financial muscle to support research and promotion.

Independent and small-scale as businesses go, cotton growers were well organized for political purposes. Their main concerns were to keep themselves from growing too much cotton and to seek government support for research and relief from hard times and market fluctuations. The National Cotton Council, created in 1939, and its offspring, the Memphis, Tenn.-based Cotton Producers Institute (CPI), had proven adept at influencing national farm policy. But as the 1960s wore on, these organizations were not able to help growers compete. Cotton’s share of the market for retail apparel and home fabrics plummeted from 63% in 1960 to about 45% in 1970, on the way to its historical low of 33% in 1975.

Farmers supply, but their fate is much more the story of demand. It was clear that this most traditional of American industries would need to embrace a fresh approach. Cotton

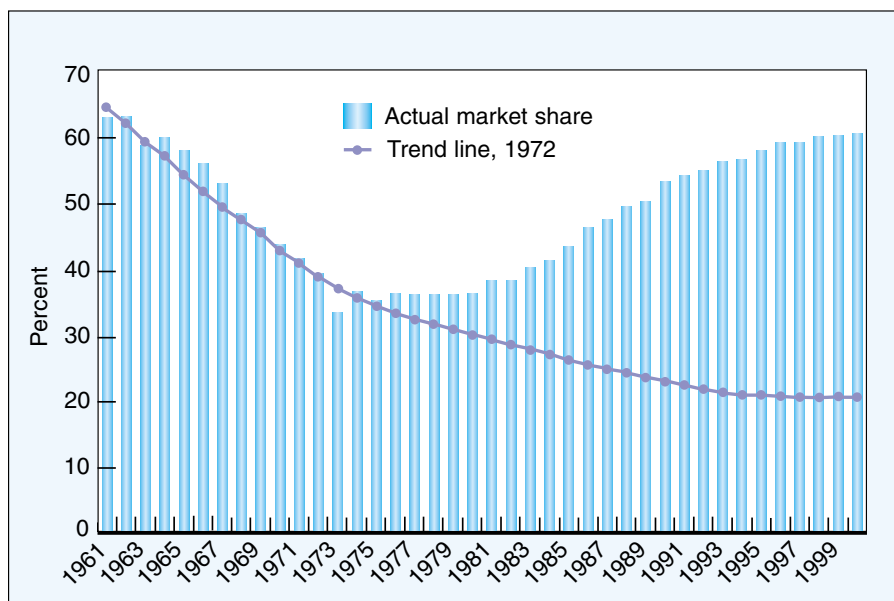
growers, always attentive to the problems of supply, would have to learn how to market their crop. The industry was entrenched in 18 states spanning the Old South and new rural Sunbelt, but its new champions would emerge from the urban corporate world: an advertising executive from Connecticut, a graphic designer in San Francisco, and marketing gurus of Madison Avenue.

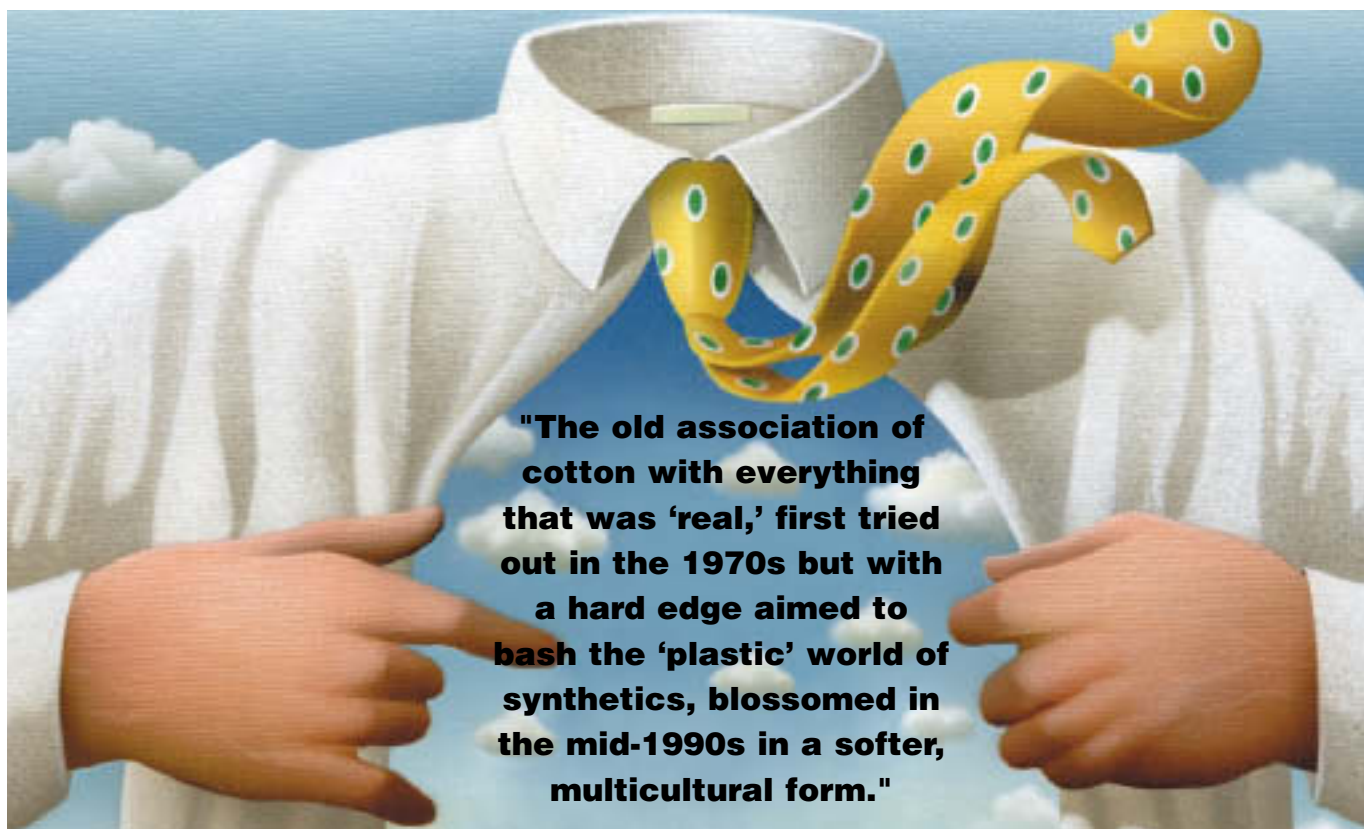
In April 1970, half a dozen entrepreneurial growers moved to save their industry. Through the agency of the CPI, they sought professional help, and found it in the unlikely persona of Dukes Wooters, an advertising executive at *Readers Digest*. Wooters had a classic New England pedigree: the Taft School, Lehigh University, military service in World War II, and Harvard Business School. He knew next to nothing about cotton.

Blessed with an unforgettable name and a deep arresting voice, Wooters was a hard-driving salesman, a marketing man with great instincts for what would move off the shelves. At 53, he had just turned-around the *Digest’s* sagging operation in Brazil and was looking for one last great career challenge. “Dukes had style,” one grower said. He shopped at Brooks Brothers, but to prepare for his interview with the CPI leadership, he cruised through Macy’s. “I looked around,” he said, recalling his surprise, “and there was hardly any cotton.” Brooks Brothers was the carriage trade; Wooters wanted to move cotton back into the mass market by the train-load.

Clearing the Ground

No city was more closely identified with a commodity than





Memphis was with cotton. CPI's research staff was based there, and a small marketing organization, comprising mainly Memphians, was lodged in tatter-down offices in the Empire State Building. Wooters let them go, all but one. As Wooters tried to explain to one nonplussed cotton grower, "you're not just raising a crop, you're selling fashion on Seventh Avenue."

To compete, growers would have to embrace the big-city, consumer-driven culture of marketing. CPI's headquarters were moved to New York. Its research operations were transferred to Raleigh, near North Carolina State University's textile school and near many of the country's major cotton textile manufacturers. Wooters determined that CPI would have to change its name, too. It was a publicly funded body, but Wooters chose "Cotton

Incorporated." He intended to run Cotton Incorporated as if it were "a real company," like *Readers Digest* or, for that matter, cotton's nemesis, that great innovator in synthetic fibers, DuPont.

Cotton Incorporated had a total annual operating budget of just \$20 million to pay for marketing, research and administration. Its funds came from a voluntary contribution of cotton growers channeled to it by the Department of Agriculture's Cotton Board (Today the assessments are mandated by law.) Yet the company's mission was ambitious, embracing almost every aspect of production and distribution. Wooters saw the cotton market as a continuous loop that bound thousands of growers to millions of consumers through the good offices of textile mills, clothing manufacturers, and retailers. The relation-

ships all along the loop were dynamic and interdependent. A "total marketing" approach was necessary.

Total marketing meant developing plans to link the mills, clothing manufacturers, retailers and consumers together into a mutually reinforcing chain of profit maximization. The mills were the first customers, and they would be offered technical assistance free of charge. Caring for them was crucial because they preferred synthetics. Cotton, like wine, was highly variable in quality; synthetics were uniform, easier and cheaper to process in volume.

Total marketing meant conveying back to those engaged in research and technical services ideas from the marketplace for new and improved fabrics and finishes. It meant arming manufacturers and retailers with new fashion ideas that

could be interpreted in cotton and cotton-synthetic blends.

All that would be possible if, and only if, mills, manufacturers and retailers were confident that the demand for cotton was there. Most dramatically and publicly, Cotton Incorporated would stimulate consumer demand with advertising and promotions, not of cotton as an agricultural commodity – “that funny looking white stuff,” as Wooters called it – but of cotton as a brand.

Cotton's Seal

The first step in converting cotton from an agricultural commodity into a consumer brand was the creation of a new image. Cotton, Wooters felt, had an image problem going back a lot farther than the stodgy dungarees-and-faded-cotton-frock-memories of rural America. Ironically, the image of rural work clothes would prove to be a key to cotton's salvation.

While visiting Levi Strauss in 1971, Wooters called on the noted designer Walter Landor in San Francisco, who presented 12 versions to Cotton Incorporated. The chosen design for the “Seal of Cotton” – one that Landor's daughter, Susan, had conceived, would become one of the most successful trademarks in the annals of marketing. It was simple and engaging – a white cotton boll, rising up from the two T's of the word “cotton,” laid against a background of earth-tone brown.

The seal appeared in 1973, and almost instantly gave cotton a new identity, making a deep impact on public awareness, a rare masterpiece of graphic design-as-communication. The design conveyed several positive messages. If nature was

good, then cotton was good. Cotton had roots, but it also had bloom. Cotton was pure, soft, comforting and natural. Cotton was something familiar that you wanted to have and to keep around.



Creating Consumption

From its inception, the seal would stand at the center of an intensive and innovative advertising campaign designed to “pull” cotton back into consumer consciousness. The broad middle class of consumers of Wooters's generation – those who came of age in the 1930s and 1940s – had largely forsaken cotton for the wash-and-wear convenience and economy of synthetics. But it happened that their children, however, the baby boomers born between 1946 and 1964, were clad in cotton, or, to be more exact, in denim.

Denim's history reached back into the nineteenth century. Though not indigenous in origin, denim – used in dungarees or overalls – had become the quintessential American fabric. In the 1960s, denim took on a new appeal for the young. Blue jeans looked unkempt, required little care, were comfortable and, most

important, projected an image that rebuked the buttoned-down fashion statements of the boomers' parents' generation. An emblem of protest, jeans were bound up with rebellious acts ranging from recreational drug use to civil rights and antiwar demonstrations.

The worry for cotton growers was that boomers might abandon denim as they aged. The problem, then, was not just to sell jeans to contemporary customers, but to do what synthetic manufacturers had done so well: sell “fiber consciousness.” In order to craft its own approach to advertising, Cotton Incorporated's marketing staff spent months studying the master, DuPont, the leading synthetic-fiber manufacturer. What they learned was that they must focus the market's attention on the performance characteristics of cotton garments.

Television Guides

Cotton's consumer advertising began in 1971. The medium was almost exclusively network television. This tactic set cotton apart from other agricultural marketing programs. The first ads in 1971, created by the Jack Byrne Agency, honed in on a budding cultural notion that had its origins in the boomers' counterculture of the 1960s: if something was “natural,” then it must, somehow, be better. These ads carried the tag line “Cotton: It's a Natural Wonder” (with “Brought to You by Cotton Incorporated and America's Cotton Growers” tucked in at the bottom of the screen). Viewers learned that they liked those scruffy old blue

jeans because “Levi’s, still makes them – all 100 percent cotton.”

The effectiveness of Cotton Incorporated’s advertising can be ascribed to the company’s long running relationship with the advertising agency, Ogilvy & Mather (O&M), whose co-founder David Ogilvy was an evangelist for branding. Cotton Incorporated had little to spend by large corporate standards, and the dispersion of its funds was politically sensitive. Hence, O&M faced a dilemma. How could it create ads for cotton that were high impact yet cost effective, carefully targeted and yet universally appealing? The seal was key. Animated for television, it grew in a few seconds before the viewer’s eyes, up from the good brown earth into a full-blown soft, white cotton boll.

O&M found selective, high-impact venues for cotton without breaking the bank. For example, Cotton Incorporated focused most of its 1976 advertising dollars on the Olympic Winter Games at Innsbruck in Austria. A fruitful media tie-in was cotton’s regular appearance, starting in 1977, on NBC’s TODAY Show, an association that vaulted Cotton Incorporated into the front ranks of consumer advertising. As more cotton products were selected for promotion, familiar television personalities delivered live commercials on the set. Viewers saw Barbara Walters in a bright Hawaiian shirt posed beside the Seal in a tropical setting, exuding confidence that cotton was “doing a lot to make your life more comfortable. I know it’s making my life comfortable right now.”

It all worked like a charm, producing brand awareness and stimulating consumption. After one year, 18% of consumers could identify the seal. By the end of 1976, when awareness of the seal jumped to

from the rear, in tight denim jeans, available – along with lawnmowers, washing machines and power tools – at your friendly hometown Sears. The implication was clear: in a world filled with fakery, cotton was real. It performed the way you wanted. Wearing it made you look and feel good, not just physically, but emotionally too. The long-term message was: “Come home to cotton!”

Touting Performance

Cotton’s market share took off in the 1980s, from 36 to 50%. The nation was emerging from a decade that had included defeat in Vietnam, two oil shocks, rampant inflation, and deteriorating competitiveness. The economy and corporate America were now in the process of repair, and the nation’s mood edged toward a new confidence. Cotton’s advertising voice grew more confident, too.

O&M co-opted an idea from the synthetics manufacturers, of identifying cotton as a “performance” fiber. (This was a claim made possible by technical improvements in cotton fabrics, driven partially by better breeding programs.) Television viewers were wowed as ballerina Heather Watts pirouetted in front of New York’s Lincoln Center and proclaimed the wonders of her 100% cotton Ship’n Shore™ shirts: “All cotton plus permanent press: now that’s high performance.”

The “True Performance” campaign, originated at Cotton Incorporated and developed and executed by O&M evoked probably the most compelling image of cotton since coining of the phrase “King Cotton” in the 1850s. Cyclists, sailors and pole-vaulters strenuously



"The seal appeared in 1973, and almost instantly gave cotton a new identity, making a deep impact on public awareness, a rare masterpiece of graphic design-as-communication."

46%, cotton’s market share edged upward to 36%. (Today more than 70% of American consumers recognize the symbol, even without the word “cotton.”)

The seal was used, for a transitional period, to mark cotton-dominant “blends,” one way to help recapture market share. The 60/40% cotton/synthetic shirt became commonplace on men’s store shelves. Then in 1977 and 1978, Levi Strauss attempted a denim blend. The mix was modest (never more than 15% polyester), but the strategy was a marketing disaster for the jeans maker. An aroused Cotton Incorporated pounded away at the heresy, reminding consumers that the denim they had known and loved since childhood was “100% cotton.”

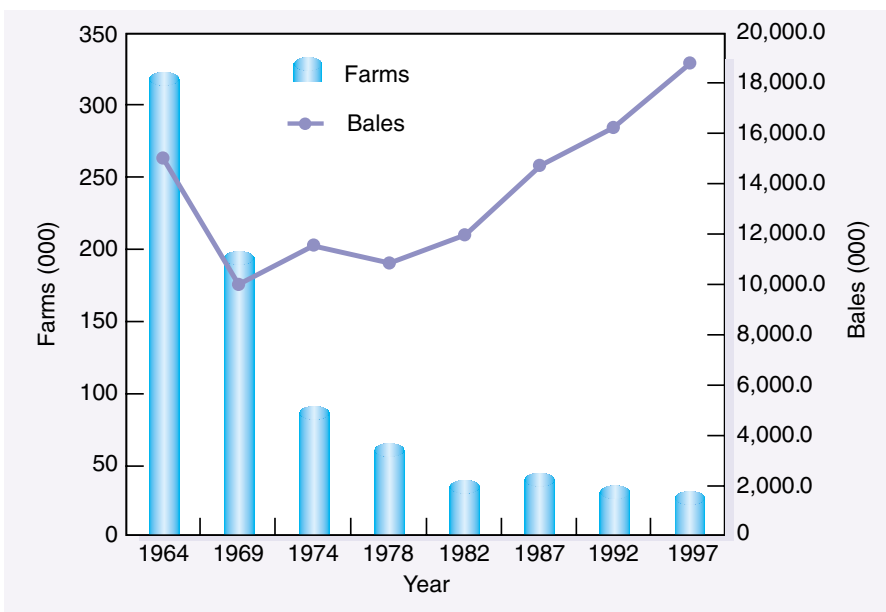
A revised denim campaign featured pretty young women viewed

“performed” in their cotton duds, as “True Performance” dominated Cotton Incorporated advertising through the eighties. The campaign included an elaborate labeling effort at the retail level. Attractive “True Performance” hang-tags, depicting the slogan and the Seal, appeared on millions of garments in the biggest retailers and smallest specialty shops, alike.

“True Performance” was a watershed campaign. But demand for particular types of cotton apparel and home furnishings, like demand for many other consumer products, inevitably varied with fashion and the whim of consumer tastes. The challenge therefore was to even-out these peaks and valleys by cultivating loyalty to cotton as an essential component of the good life.

“The Fabric of Our Lives”

Dukes Wooters left Cotton Incorporated in 1982, and in 1987, its president Nicholas Hahn took a new approach to advertising. In focus groups and one-on-one interviews, people were invited to talk about fiber, fabrics, garments, cotton, wool, polyester, and anything to do with clothing. Something surprising was discovered. Interviewees said that wool was warm and scratchy, and that polyester was sticky, hot and did not breathe. But they also professed “something” (they did not know what exactly) “about the feel of cotton.” While talking about cotton, they tended to touch themselves, whether or not they were wearing it. Some prompting got subjects to talk about how they liked having cotton close to their skin, and how little babies get wrapped in cotton, and other emotion-laden images connecting cotton with life’s various stages.



Based on this news, O&M concocted the deceptively simple phrase, “The Fabric of Our Lives,” for a campaign that would become one of the most memorable in advertising history. The documentary filmmaker Leslie Dektor’s avant-garde realism, aimed at showing people as they were, did not talk about performance features at all. The target audience had changed, so now the message was intergenerational. Cotton was authentic, from “cradle to grave,” not just for the baby boomers, but their parents and, before long, their children, too.

For the launch of the Fabric of Our Lives campaign, Hahn authorized an expenditure of \$2 million of the company’s \$7 million advertising budget in one day – Thanksgiving 1989, the day before the single largest shopping spree of the year. It was the day when families watched television dawn to dusk, from the Macy’s Parade through professional football games to the “Sound of Music.” Cotton commercials blanketed the screen, as one hundred fourteen million

viewers saw and heard them, over and over again.

The size of Cotton Incorporated’s expenditure enabled O&M to negotiate for reinforcing billboard space. “Macy’s Thanksgiving Day Parade, Brought to you [in part] by Cotton Incorporated. Cotton: The Fabric of Our Lives.” Subsequently, O&M sought to sustain Cotton Incorporated’s media “presence” with key franchise positions – twice a week with Willard Scott on TODAY; beside Peter Jennings on ABC News; on Late Night with Jay Leno; and on other highly rated shows.

Getting Emotional

Cotton and the good life went together, like parents and children in happy homes. Cotton’s unvarnished advertising “reality” confounded some critics, but it was, in O&M’s word, “emotionally relevant.” In the late 1980s and 1990s, the linkage between liking a product and perceiving it as authentic accounted for some of the great brand successes of the era, like Starbucks™, The Body

Shop™ and Virgin Atlantic™. The old association of cotton with everything that was “real,” first tried out in the 1970s but with a hard edge aimed to bash the “plastic” world of synthetics, blossomed in the mid-1990s in a softer, multicultural form.

In the 1990s, the Fabric of Our Lives, campaign embraced more modish themes. One ad featured an African-American family, sitting around the dining room table in a reprise of the Norman Rockwell image of Thanksgiving dinner. There are multiple generations, natively turned-out, nice up-market surroundings, lots of smiles. “How different can we be,” went the voiceover for a spot featuring a rainbow coalition of cotton-clad actors, “when we all love to wear the same thing?” The actors in the ads appeared younger. Research showed that turn-of-the-millennium teens and young adults liked cotton well enough but displayed lower “fiber-consciousness” than their parents. The job of educating the market was never-ending.

On the cusp of the twenty-first century, an abrupt change occurred in workaday fashion that was tailor-made for cotton. Corporate America went casual, and cotton supplied the alternative, as male corporate America doffed its woolen suits and female corporate America its linens and silks, for open collared shirts and comfortable-fitting khakis. “What would it be like,” came the question as the screen filled with diverse hard-working Americans, “if we all dressed as if work were fun?”

Corporate casual dress, of course, was a hallmark of the dot-com era. Yet while that particular bubble has burst, cotton’s staying power has not. Consolidating the gains it had

made in the 1970s and 1980s, cotton closed the millennium with a more than 60% share of the market for retail apparel and home fabrics. What other industry (or company, for that matter) has ever lost nearly half its market share and won it back?

Competition and Survival

The story of cotton’s renaissance is not solely a story of consumer marketing. Dukes Wooters had envisioned from the outset that Cotton Incorporated would have to meet rising consumer expectations with ever-improving fiber quality, or gains in market share could not be sustained. Competitive threats – from low-cost synthetics and low-wage foreign producers – would have to be checked with relentless quality improvements and cost-reductions on the farm.

The practical result of his vision is that the American cotton one wears today is far superior to the cotton of forty years ago. It’s easier to fabricate and to care for. The industry invests in research and development spanning fundamental agricultural science to farm-level technological improvements. Today, cottonseed research traverses the cutting edge of genetic engineering. Cotton can be grown in colors. Enterprising growers invest in automated tractors that can till the land to fine precision, locating their positions with within two centimeters, day or night, in all weather, increasing yields, lowering labor costs. And hungry textile mills (though they have mostly moved overseas) get what they want most: American cotton that is longer, stronger, finer, cleaner, and cheaper.

It’s a good thing, too. Cotton growing is a ruthlessly competitive global enterprise. Cultivated in more

places around the world, cotton trades more freely than ever. American growers have learned to manage demand but cannot administer price. As quality has improved and as costs, and prices, have come down, it has been a boon to consumers, a challenge to growers. Despite mounting subsidies from the government, to compensate them for losses in low-price commodity markets, the pressure on cotton growers to deliver higher quality for less is unabated. Staying competitive demands a high level of scientific and business sophistication. It requires investment in technology, management, and marketing, and a broad-based knowledge of world affairs, from the weather in Australia to political conditions in Pakistan, from what’s fashionable in Paris to what’s happening in the world’s genetic and biochemical laboratories.

In this dynamic environment, only the strongest survive. Farms have consolidated to increase capital and scale economies. Marginal land has been abandoned, given over to other crops, converted into housing developments and shopping malls. That some 30,000 cotton growers (just a tenth of the number in 1960!) are still in business in the U.S., producing more and better cotton at lower cost, is testimony to their collective mastery of the market.

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By **Daniel Gross**

The Original Information Superhighway

Two years after the .com meltdown, wreckage continues to pile up on the information superhighway. Companies that set out to construct and manage the 21st century Internet – Exodus Communications, Global Crossing, 360Networks, and Winstar – now languish in Chapter 11. In all, network builders plowed some \$30 billion into laying 90 million miles of fiber-optic cable. But the vast majority of those tiny glass strands lie dark, unused.

It turns out, in the end, that the New Economy turned out to be not so new. For the cycle we have just seen in fiber-optics – overbuilding, excess capacity, ruinous competition, falling prices, bankruptcy and consolidation – is eerily familiar. Indeed, a remarkably similar set of circumstances surrounded the introduction of the first information superhighway: the telegraph.

Author Tom Standage aptly refers to the telegraph as “the Victorian Internet.” Just as was the case with today’s fiber-optic network operators, revenues were slow in coming to early telegraph owners. In 1845, inventor Samuel

Morse helped form the Magnetic Telegraph Co., which linked New York with Washington. In its first six months of operation, it tallied revenues of \$413.44 against expenses of \$3284.12. Like Internet builders, early telegraph pioneers found connecting the “last mile” to be a tough chore. By mid-1846, you could send a message on the Magnetic Telegraph Co.’s line from Washington to Jersey City, New Jersey. But the message had to cross the Hudson – that mythic last mile – by boat. And throughout the 1840s and 1850s, lines popped up, only to be taken down and sold for scrap a few months later – much the same way as Winstar’s once well-capitalized networks were sold in bankruptcy court for pennies on the dollar.

The natural follow-on to the periods of overbuilding and failure is consolidation. That’s what is happening with the fiber-optic network companies. And that is precisely what happened in the maturing telegraph market. The New York & Mississippi Valley Printing Telegraph Co., formed in 1851, quickly snapped up 11 lines

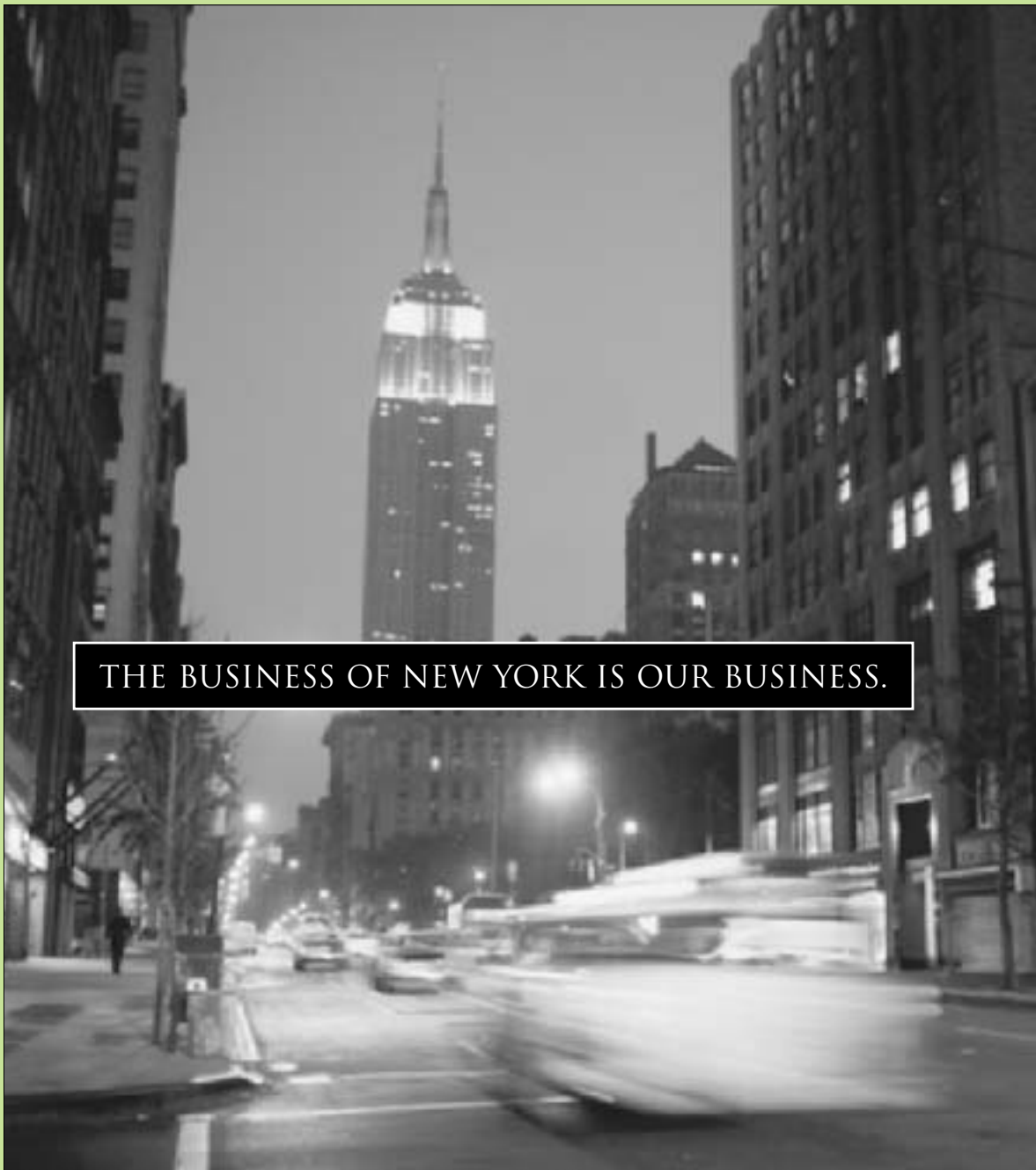
in five states in the Midwest. In 1856, it changed its name to Western Union.

By the mid-1860s, acquisitive Western Union was the undisputed master of the telegraph, which, with the advent of trans-Atlantic cables and automatic telegraphy, had emerged as a crucial business tool. In the late 1990s, Cisco Systems CEO John Chambers boasted that the data on his desktop PC shed enormous light on the state of the New Economy. Just so, Western Union president William Orton told Congress in 1870 that the telegraph “is the nervous system of the commercial system. If you will sit down with me at my office for twenty minutes, I will show you what the condition of business is at any given time in any locality in the United States.”

Like the early telegraph companies, today’s fiber-optic network companies may have failed as investments. But both groups of entrepreneurs succeeded in laying down a highly useful infrastructure. By the 1870s, a farmer in a small town in Iowa could send a message to a distant relative in New York by using the telegraph. Today, a farmer in a small town Iowa can send a message to a distant relative in New York by using the Internet.

Traffic may travel on the information superhighway at the speed of light. The fundamentals of investing in information infrastructure change at a somewhat slower pace.

DANIEL GROSS is editor of *STERNbusiness*.



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