ISERREXAMPLES18MAY01

CENTER FOR INFORMATION INTEGRITY RESEARCH

IS ERRORS – SOME RECENT EXAMPLES

1. Ref. The Wall Street Journal, October 8, 1997:

   Bre-X Minerals Ltd., the scandal-plagued mining company, says private investigators it hired uncovered a history of tampering with gold samples at the company's Busang deposit in Indonesia, which they blamed on geologists at the site.

   Shares of Bre-X, based in Calgary, Alberta, became worthless after claims of a huge gold find at Busang turned out to be fraudulent in May. Bre-X is in Canadian bankruptcy-court protection from creditors, as it fends off numerous lawsuits filed by disgruntled investors.

2. CEO Kevin McKay, who heads SAP's American operations, blames complexity. Each customer he says, has a different culture and different approach to installing software. "You can't possibly replicate the myriad of ways in which companies will start to use the software," he says. "No testing is comprehensive enough to get at this."

3. Eileen Allen, 56, learned this the hard way. Earlier in 1999, the self-described stay- at-home mom in maple valley, Wash., purchased 13 shares of Amazone.com through online broker Ameritrade at 186, it's all time high at that time. As Allen tells it, a glitch in Ameritrade's computer system then converted her order into 186 shares at 190. She quickly tried to unwind the trade but couldn't get through to Ameritrade by e-mail or phone. Over the 10 days, Amazon nose-dived to 104. Ameritrade says the problem was a user error, not a glitch. Either way, Allen and her husband had to cash in an IRA, liquidate other savings, and sell the Amazon stock-for a net loss of more than $15,000.

   Whichever side is right, online crashes are no anomaly. *The most fail-safe computer systems turn unreliable when they are thrown into untested combinations.*

4. Some recent additional examples (Source Business Week November 26, 1999):

January 1998	1. Computers in New York state mistakenly terminate coverage for hundreds of Medicaid recipients.
March 1998	2. A new computer system designed to thwart immigration fraud malfunctions, denying green cards to thousands of legitimate applicants.
April 1998	3. a bizarre error message on a Cisco switch used by AT&T

	propagates across hundreds of other switches on a high-speed data network. A network crash cripples thousands of credit-card readers and bank ATMs.
June 1998	4. There are glitches galore as millions of users of Microsoft's Windows 95 upgrade to Window's 98.
	5. Hundreds of flights are delayed by a system crash caused by a software upgrade at an air-traffic-control center on Long island.
July 1998	6. A NASA review panel blames a series of software and control errors for knocking out it's $1 billion Solar and Heliospheric Observatory (SOHO).
	7. IBM's Mexican unit agrees to pay millions to Mexico City in compensation for a failed Database system that was supposed to help the city fight crime.
August 1998	8. Bankrupt drug wholesaler FoxMayer sues software giant SAP over a Software System that snarled the company's operations.
September 1998	9. Computer snafus shut down the engine of a Ukrainien-built zenit 2 rocket five minutes after lift-off. The rocket crashes, destroying 12 commercial satellites owned by Global star Telecom worth more than $185 million.
December 1998	10. A computer system called the Traffic Collision Avoidance System malfunctions, appearing to place two jets-from North West Airlines and Air Toronto-on a collision course southwest of Albany.
December 1998	11. The Near-earth Asteroid Rendezvous spacecraft misses it's encounter with the Eros Asteroid when control software throws the satellite off course4.
February 1999	12. A malfunctioning computer knocks out New York City's 911 system for more than an hour.
April 1999	13. Two of Intuit's electronic tax-filling services are down for 16 hours just two days before tax-returns are due.
May 1999	14. Security watchdog groups say free e-mail programs from Microsoft, Yahoo, and Excite are riddled with security holes.
June 1999	15. Air-safety equipment gives false altitude information to a Korean Air Jet. It climbs, and nearly collides with a British Airways jet.
June 1999	16. A software glitch knocks out service on eBay for 22 hours, halting auctions of Beanie Babies.
August 1999	17. Thousands of navigation devices in Japanese vehicles freeze when Global Positioning System date is reset.
October 1999	18. A problem in Hershey's enterprise software contributes to shipment delays of Halloween candy.
October 1999	19. A computer glitch halts on-line trading at Charles Schwab & co. for 2 & ½ hours. Customers continue through branch office and via phone.
October 19999	20. Software incompatibilities delay shipments by Whirlpool of its latest appliances.

November 1999	21. Toshiba swallows a $ 2.1 billion settlement for selling laptop computers whose disk-drive chips contain buggy microcode.

- Some still more recent examples

5. IBM laptop for $ 1 ……..oops, it's an error:

International business Machines Corp's Web site, "for a couple of hours" on Tuesday offered Think Pad i Series models 1421 and 1441 laptop computers for $ 1.00 …. Ben Austin, a marketing director of a company based in New York's Silicon Alley, took advantage of the heavily discounted price and ordered overnight delivery ……. Austin received a note early Wednesday saying that the $ 1.00 price for the two models was "inaccurate due to a process error," and that orders at that price would be cancelled. ---- Reuters ……Report by Derek Caney, New York 20 January, 2000 which appeared in Economic Times, New Delhi dated 21 Jan., 2000.

6. WBMQ, Chicago Radio News Channel on13 May, 2000: Due to FBI Database problem, sale of guns stopped (for sometime) across US.

7. Errors in Global Databases: Currently a number of international agencies are constructing global databases. For this purpose the agencies take data from a variety of different sources, each with their own characteristics of precision and accuracy. To explain, data from remote sensors is subject to errors inherent in the classification and interpretation methods used, in the satellite platform, and in the sensor itself, so that the relationship between the truth as represented in the data which enters the database, and the truth as it appears on the ground, is complex and obscure. Further, within the database the remotely sensed data may be combined with data from the maps, which is subject to errors in digitizing, in the geodetic base on which the map was based, in the error inherent in the figure of the earth used as the basis for its projection, and again in the nature of the truth that is being represented.Thus there is always the problem of uncertainty or accuracy of products of spatial databases.

8. Reference: TIME, MAY 24,1999, "The Embassy Bombing: Small Steps to a Big Disaster" by Mark Thompson/Washington, Pages: 32-33 "The Embassy Bombing: Small Steps to a Big Disaster "How NATO blew it: Bad data – and a lousy review process – led to a tragedy
    1. The CIA Using an old map, spooks put the right target address on the wrong building
    2. GETTING LOST Planners stuck the coordinates of that wrong site on a target list
    3. WRONG AGAIN A review team in D. C. failed to note that the map address and the aim point didn't match
    4. DATA LOCK Faulty databases in Europe didn't show the target as an embassy

5. FLYING BLIND With no Belgrade spies (feedback), NATO couldn't do a final eyeball check"

9. Reference: TIME, December 20, 1999, "MARS Reconsidered" by Michael D. Lemonick, Page 17. "MARS Reconsidered

Two fiascos in a row may force NASA to rethink the idea that faster, cheaper spacecraft are always better Despite NASA's can-do public attitude, expecting a perfect record when you're sending machines across 80 million km of empty space to an alien world would be naïve. But trying to do it in a slapdash fashion doesn't help. "There's is a difference," grouses John Pike, a space expert with the Federation of American Scientists, "between cheap and cheaper."

Evidently, NASA has been leaning toward the latter. Just three weeks before Polar Lander (Launched January 3, 1999) was set to arrive at MARS, a NASA panel issued its report on the (MARS) Climate Orbiter failure in September (The Climate Observer was launched on December 11, 1998). The prime cause of that disaster, as everyone now knows, was a truly dumb mistake: the spacecraft's builder, Lockheed Martin Astronautics, provided one set of specifications in old-fashioned English units, while its operators at NASA's Jet Propulsion Laboratory were using metric.

But the report also uncovered management problems that let the mistakes go uncovered, including poor communication between mission teams, poor training and inadequate staffing. Indeed, the navigation team was seriously overworked, trying to run three missions at once.

Because the Polar Lander was also built by Lockheed Martin, and because it was to use Mars Climate Orbiter as a communications relay, the panel looked into that probe too, finding the same weak management. "A recurring theme in the board's deliberations," reads the report, "was one of 'Who's in charge?'" It also raised questions about the probe's landing technology, which was complex, risky and largely untested.

With Polar Lander nearing its plunge, NASA promised to respond to the concerns, and the agency did address a couple of them. But by then, the die was cast (the reality has its own dynamics). Maybe the lander was done in by some unforeseeable – a badly placed boulder, perhaps, or a crevasse – which no probe could have avoided (uncontrollable and probabilistic event). And given the complexities of getting a spacecraft to Mars and having it work properly, it's no surprise that something should go bad.

One of the bid advantages to the faster-cheaper-better approach, in fact, is that when probes inevitably do fail, the loss is relatively small. Mars Observer launched on September 25, 1992, which vanished without trace just before NASA's Dan Goldin took office, cost the nation (U.S. A.) more than $1 billion; Climate Orbitor (which was lost in September 1999) and the Polar Lander with Deep Space 2 Probe (lost in December 1999) have set tax payers back only $319 million between them. "We

launched 10 spacecraft in 10 months," said Goldin. "We used to launch two a year. We have to be prepared for failure if we're going to explore.

Even NASA's critics agree that doing things faster, better and cheaper makes sense- if it's done right."

10. Reference: TIME, August 9, 1999, Personal Time: Your Health, page 53 On Trustworthiness of Information, "A mitral-valve problem isn't as common – or as deadly – as your doctor might have told. The drama begins with a noise you can not hear. Your doctor places a stethoscope over your chest and detects a faint murmur or a distinctive clicking sound whenever your heart contracts. "There may be something wrong with one of your valves," he says. "I would like you to get some ultrasound tests." Seven days and several hundred dollars later, you learn you have mitral-valve prolapse, a condition in which tiny flaps of tissue that keep blood from flowing backward between the chambers of the left side of the heart don't close completely.

    Even though you feel fine, your insurance company jacks up your premiums, citing research from the past 20 years that shows you're at greater risk of dying suddenly or suffering a stroke. Your dentist makes you take antibiotics every time you get your teeth cleaned to prevent a potentially fatal infection of your defective valve. And your family starts treating you like an invalid.

    At least you're not alone. There's a shelf full of medical reference books all in agreement that mitral-valve prolapse affects about 1 in 10 Americans – an estimated 10 million people – and is even more common among young women.

    But guess what? The reference books, your insurance company and may be even your dentist are all wrong. Mitral-valve prolapse is neither as prevalent nor as dangerous as it has been portrayed, according to two studies in a recent issue of the 'New England Journal of Medicine.' Although the more severe forms of the condition can cause life-threatening complications, most folks who have been told they have it can probably stop worrying about their tickets.

    The new findings show how important it is for researchers to look at the whole population and not just patients in university hospitals, where the worst cases are usually referred. By examining a broad cross section of adults in the long – running Framingham Study, Dr. Lisa Freed and her colleagues found only 2.4% of subjects had mitral-valve prolapse and that half those cases consisted of less harmful variations on normal cardiac design. They also found the condition to be equally uncommon among women and men.

    It turns out the anomaly is easy to diagnose. Because the mitral-valve is shaped like a saddle when the heart is beating – something that Dr. Robert Levine, a cardiologist at Massachusetts General hospital in Boston and a co-author of both the (above

indicated) reports, discovered 10 years ago – an ultrasound scan can indicate a bulging of the valve where actually none exists (measurement/ observation error). Since then he has determined that the front –to-back view is more reliable (Information Integrity) than the side- to- side one. (Incidentally, both views are standard on ultrasound exams of the heart.)

11. As IS Error example that illustrates the following:

In case of complex information processing situations, IS errors, amongst others, are caused by (a) difficulty in dealing with multiple goals and many factors and uncertainty accompanying them resulting in incorrect statement of information variables and (b) by difficulty in estimating time sequences (forecasts) of these information variables. Particularly in respect of time configurations it may be observed that they evolve/ develop over time. When they are only half completed, one cannot predict with certainty what their form will be. It is also difficult in the thick of developing events to leap back and forth in time, now looking into the future to speculate what will happen, now looking into the past to review what has already happened.

Below is given an example illustrating the above:

Reference: TIME, November 20, 2000, Special Election Report, (1) "When the Going Gets Weird …." By Carl Hiassen/ Islamorada ' Page 14; (2) "Reversal of Fortune" by Nancy Gibbs, Pages (18-31)

So what really happened in Palm Beach?
"So what really happened in Palm Beach? The election supervisor says she wanted to make the ballot easier for seniors to read. One can believe this because it's a well meaning bungle – a bureaucrat tries to do something nice for a few old folks and ends up paralyzing the nation. (A complex problem solving example wherein one begins by setting a positive, general goal which is well meant and commendable; but characterized by single criterion and not broken in to intermediate goals and as result the IS evolved along its own course without any reference to the initial objective) [1]. (Of course incorrect goal setting need not be the only reason for emergence of an election issue.) The last time an election (in Florida) got so much attention was three years ago, when the race for Miami mayor was stolen with forged and phony absentee ballots. One belonged to a dead guy named Manuel Yip, who, it turned out, had been voting regularly from the afterlife. Further investigations revealed some 17,000 deceased persons on state voting list. Also one recent brouhaha involved the dubious residency status of a candidate for a Miami-Dade school-board seat, who claimed to be living in a tool-shed on a farm [1]. (Reasons as these can be seen as natural aberrations (statistical acceptable phenomenon in that) that may characterize any modern day electoral constituencies and election issues therein, particularly when stakes are high; and therefore do not form the basis for our analysis of IS errors here.)

On the election day (Wednesday ----------), the first alarms went off at Gore headquarters at 6 a.m. Workers there started hearing that voters in heavily Democratic Palm Beach were confused by the ballots. “The ballots do not line up in the machine with the correct candidates,” said Joan Joseph of the Palm Beach Country Democratic Party (data representation error). “People who think they are voting for Gore could be voting for Pat Buchanan, because the word Democratic is lined up with Buchanan.”

As soon as Democratic party officials realized the problem, they (amongst other things) frantically printed flyers to warn voters about the problem and tried to get party activists to the polling places to sound the alarm. But they had already missed the important working hours (delay in action implementation).

Midafternoon, when the initial exit polls came in, the first hints of history in the making began to flicker through the nation’s e-mail system (speed of processing and of transmission of information). They confirmed what some Bush aides had feared – that they (Republicans) had lost momentum in the closing days (tallying of two forecasts reinforce an information – one forecast based on voter’s pre-poll responses in closing days and forecast based on exit poll responses as voters come out after polling).(It seemed) voters who had made up their mind in the closing days (due to some factors which could be identified) were breaking to Gore (emerging information decision in the form of interpretation based on analysis of exit poll results).

Shortly before 8 p.m. the networks announced that Gore had taken Florida. The states of Michigan and Pennsylvania soon fell as well, and every media anchor began showing how it was increasingly difficult for Bush to win.

What is important to note is that in course of this, all networks were reading the data from the Voter News Service (VNS) consortium and grinding it through their own analysis (a means for competitive advantage) to try to be the first to declare a winner. LITTLE THINGS MAKE A DIFFERENCE WHEN EVERY MINUTE COUNTS (real world situations are complex situations characterized by many goals and multiple factors that are interdependent and having their own dynamics), AND WHAT THEY DID’NT KNOW WAS THAT VNS HAD A BAD SAMPLE IN TAMPA, SOME FAULTY DATA IN JACKSONVILLE. PLUS THERE WERE SOME VOTERS IN PALM BEACH WHO TOLD THE EXIT POLLERS THAT THEY HAD VOTED FOR GORE, WHEN IN FACT THEIR VOTE HAD BEEN REGISTERED FOR BUCHANAN.

(For the Republican camp,) the media reports had been hard to take. The Bush aides at campaign headquarters were beside themselves that the networks would call Florida even before polls had closed in the more heavily Republican panhandle, which is in the Central time zone. Also, the raw numbers the Bush people were seeing were telling them they were slightly ahead of Gore statewide,

not behind. “I don’t believe some of these states they’ve called,” Bush said (trustworthiness of information).

The calls were desperate because the steam was going out of Bush effort in the West. In California, the Florida call hit just at the wrong moment: drive time. Voters and volunteers have to be wooed on their way to work or going home. Once they get home, it’s a lot harder to get them out of their comfy chairs into dark cafeterias and libraries to vote. After Florida was called, Bush volunteers just started going home or not showing at all.

At 8.15 p.m., Democrats were intensively calling the states of rural New Mexico, Arizona, Minnesota, Las Vegas hunting for the magic 270 electoral votes in states in which the polls were still open.

And then something happened. At 9.55 p.m., CNN took Florida back from Gore, and the other networks shortly followed, declaring it too close to call. The lobby of the Nashville Loews was suddenly empty. For his part, Bush “was like a prize fighter pulling himself off the mat.” Thus he kept calling Rove at the headquarters, demanding new information. “How does it look?” he would ask.

In the early hours of Thursday by 1:30 a.m., most states had tumbled one way or the other, and both presidential candidates had a total of 242 electoral votes. The counts were unimaginably, unbearably close. Florida was still undecided, but by 1 a.m. the Bush camp had more than a 200,000-vote cushion. Bush staff members knew Dade and Broward counties still hadn’t reported, but their models told them they had a lead that was insurmountable. At 2 a.m. came the news that Bush had enough votes in Florida’s Hillsborough County to win the state – and the whole prize. Ninety-eight percent of the precincts were in, and they were ahead by more than 50,000 votes.

At 2.15 a.m. the networks gift-wrapped Florida once more and this time handed it to Bush. Gore called Bush at 2.30 a.m. to concede. But he (Gore) was suddenly saved by the Internet (speed of communication). As Gore’s motorcade splashed through the rainy streets to the war memorial for the concession speech, traveling chief of staff Michael Feldman on his pager received a message for Campaign chairman Bill Daley. Message was from field director Michael Whouley, who was watching the Florida Board of Elections website, saying, “Changed situation here ….. margin down to 900, and within minutes, it was 500, 200, slipping pretty quickly.” Daley told Feldman to keep Gore from going onstage.

At around 3:45 p.m., Gore phoned the Governor Bush to say he would be happy to concede and give him support, but for now, “the state of Florida is to close to call.”

When networks reported victory for Gore it was an error of incorrect forecasting based on incorrect information (due to error present in the exit poll data). When

networks reported victory for Bush, it was their mistake. Whichever way one sees, it was the case of errors that inhabit a complex IS which is what the whole process described above was. And so the end of one bitter campaign marked the beginning of another. "The American people have now spoken," Bill Clinton declared, "but it's going to take a while to determine exactly what they said."

12. Reference: TIME, December 13, 1999

- Depending on which statistics you believe, the number of Americans killed by screw-ups is somewhere between 44,000 to 98,000 every year – the eighth leading cause of death even by the most conservative figure, ahead of car crashes, breast cancer and AIDS.
- See report by "The Institute of Medicine" entitled "To Err Is Human."
  Reasons doctors and nurses make mistakes include:
  - drugs with names so similar that they are easy to confuse
  - duty shifts so excessively long that physicians and interns fall a sleep on their feet
  - Medical equipment often has lots of complicated controls. And because there is no single industry design standard, each manufacturer tends to have its own displays; nurses or doctors trained on one machine may well make a mistake when they switch to a different one.
  - Another danger arises when patients have multiple disorders and doctors aren't aware of all their medications, leading to potentially lethal combinations of otherwise safe drugs.
- Uniform standards of record keeping and record sharing ensuring Information Integrity would certainly minimize such problems.

13. Reference: 2nd editorial from The Economic Times, Friday, 6 July 2001, New Delhi.

Punching errors?

It is strange coincidence that immediately after the introduction of index-based circuit filters on 2 July brokers seem to have developed shaky hands. There have already been four punching errors in first three days of trading under market-wide circuit-filters. The biggest bloomer came on day three when 'punching errors' in Reliance Petro and ACC brought trading at the NSE to a halt for over an hour as absurd quotes saw the Nifty go up by almost 40 per cent. Even to a layman it is obvious that these were no punching errors but deliberate attempts to create chaos in the market in the hope that the regulator will rethink its decision to ban badla. Apparently, Sebi has taken dim view of these developments and issued show cause notices to the concerned brokers. But today if Sebi says says it did not anticipate this then it is an admission of its incompetence. With 53 stocks trading without price bands, this was bound to happen. Exchanges ought to have been directed to build safeguards like internal trigger mechanisms that automatically reject traders that are way out of alignment with the prevailing market price.

There have been a number of punching errors in India since electronic trading began. In December 1998, two punching errors were reported of which one was also investigated by the BSE. Even before that, in August 1997 a punching error was claimed in connection with SBI shares which even went to the arbitration committee of the BSE. This kind of abuse of the system can be put down only if Sebi is ruthless in dealing with violations. It should not allow stock exchanges to cancel trades arising out of punching errors, except where there is reason to believe the error was genuine, even if it results in some brokers going bust. It could follow the example of the LSE that did nothing about an apparent punching error – on May 15 by Lehman brothers – that resulted in serious losses. This kind of stern action would have a strong deterrent effect. In fact, soft penalties have been the basic reason for recurring instances of insider trading, rigging, etc., where gains have been far more than the penalty. With derivatives taking off in the true sense, a sound surveillance system at the exchanges and a firm regulator is vital in this period of transition. The risks of derivatives need no reiteration.

14. Reference: The times of India, 13 July 2001, page 10

AROUND THE WORLD
Error erases Fiji records

SUVA: A programming error has deleted all last year's Fiji Government accounts, the *Fiji Times* reported Thursday. The error, which has caused deferment of official audits, led to speculation of a cover up of mismanagement or abuse of taxpayer funds.

But the permanent secretary of finance, Sila Kotobalavu, is quoted saying the error occurred at the government's information technology and Computing (ITC) center.

"Confronted with the loss of the entire 12 month's financial data, the finance ministry had to request the government's 52 ministries and departments to manually re-post these data with ITC," said Kotobalavu.

15. Reference: "The Course of Cancer", TIME May 28 2001, pages 46-47.

The Course of Cancer

Step 1: ***A mistake happens in the cell.***

Sooner or later, exposure to ultraviolet light, chemicals from the environment or even the byproducts of normal metabolism damages one of the genes in a cell. In most cases this does not lead to cancer.

Step 2: ***The mistake adds up.***

It becomes harder and harder for the cells to maintain normal growth, as genes that should be *on* get turned *off* and genes that should be *off* are turned *on*.

Step 2.1: DNA-Repair Genes

These genes make proteins that correct the errors that sometimes occur whenever a cell copies its DNA. If repair genes cannot do their job, genetic mistake starts to accumulate.

Step 2.2: Tumor-Suppressor Genes

These restrain cell growth and division. Their absence or inactivation takes the brakes off cell multiplication.

Step 2.3: Growth Genes

If the genes that regulate normal cell growth and division become stuck in the *on* position, growth continues unabated.

Step 3: ***The cells turn cancerous.***

Free of normal restraints, the now malignant cells break all the rules. They divide uncontrollably, become less attached to their neighbors and invade the space occupied by normal cells.

Step 4: ***The tumor's appetite grows.***

In a process called angiogenesis, malignant cells secrete chemicals that attract and promote the formation of new blood vessels. With a steady supply of nutrients, the tumor can grow without limits.

Step 5: ***The cancer spreads.***

Pieces of the tumor break off and, in a process called metastasis, migrate through the blood and lymphatic systems. Eventually the runaway cells colonize other parts of the body and give rise to distant tumors.

16. Reference: "Prime Number", TIME May 28 2001, page 9.

Genome Map Errors

45% of Celera Genomics' fruit-fly genome map has errors, reveals a Stanford report, casting doubt on the company's larger venture, the mapping of the human genome.

17. Reference: The Economic Times, New Delhi, Saturday 28.7.01

Now Tata Tea sells at Rs. 22.40

Kolkata: Withdrawal of circuit filters for stocks on the options trading list on Friday claimed yet another victim. A wrong data entry by a CSE member resulted in a sale order for 99 shares of Tata Tea at Rs. 22.40 apiece for rolling settlement number 2002378. The exchange immediately annulled all such trades in Tata Tea at the rate of Rs. 22.40. A CSE notice flashed on the C-STAR system said the exchange would take severe disciplinary actions against members who are involved in such trades at unrealistic prices. CSE ED Tapas Dutta said, " we are examining the trades".- ET Bureau.

18. Reference: Times of India, New Delhi, July 29, 2001.

Between a virgin and a prostitute

Beijing: Chinese police have been at the center of a legal battle for several months for allegedly not knowing the difference between a virgin and a prostitute, state press reported Saturday.

Ma Danden, 19, brought a lawsuit against local police to the tune of $602,000/- after she was wrongfully arrested on January 8 for prostitution while she watched television at a hair-dressing salon, where her sister worked, the Beijing Weekend reported.

The judge in the northern Shanxi provincial court decided in Ma's favor during a May trial, after accepting a medical certificate attesting to Ma's virginity, a fact which had fallen on deaf ears the night of her arrest.

But the judge only awarded her $9/- in damages, a sum that the nation's press has found grossly insufficient, especially as police forced Ma to confess that she was a prostitute, and in light of the trauma and loss of face that she was forced to endure (AFP).

19. Reference: The Times of India, Bangalore, Friday, March 8, 2002, News Digest column on page 1.
Balayogi's death

VIJAYAWADA: Deccan Aviation helicopter pilot G. V. Menon mistook the fish ponds at Kovvadalanka village in Krishna district as agriculture fields based on the survey of a map he was carrying on on Sunday. The helicopter crashed with Lok Sabha speaker Balayogi in it. "This is a crucial factor in the probe" the investing officer said. (P.6).

20. Reference: An e-mail VVM received from Harish Dalal (iitb65 colleague) on 14

March, 2002.
It's Just Another Banking Day.... Below is an actual letter sent to a Bank in the United States.
The Bank Manager thought it amusing enough to have it published in the New York Times.

Dear Sir

I am writing to thank you for bouncing my check with which I endeavored to pay my plumber last month. By my calculations some three nanoseconds must have elapsed between his presenting the check and the arrival in my account of the funds needed to honor it. I refer, of course, to the automatic monthly deposit of my entire salary, and arrangement which, I admit, has only been in place for eight years. You are
to be commended for seizing that brief window of opportunity and also for debiting my account by $50 by way of penalty for the inconvenience that I caused to your bank.

My thankfulness springs from the manner in which this incident has caused me to rethink my errant financial ways. You have set me on the path of fiscal righteousness. No more will our relationship be blighted by these unpleasant incidents, for I am restructuring my affairs in 2002, taking as my model the procedures, attitudes and conduct of your very bank. I can think of no greater compliment and I know you will be excited and proud to hear it.

To this end, please be advised about the following changes:

I have noticed that whereas I personally attend to your telephone calls and letters, when I try to contact you, I am confronted by the impersonal, ever-changing, pre-recorded, faceless entity which your bank has become. From now on I, like you, choose only to deal with a flesh-and-blood person. My mortgage and loan repayments will, therefore and hereafter, no longer be automatic, but will arrive at your bank, by check, addressed personally and confidentially to an employee at your branch whom you must nominate. You will be aware that it is an offense under the Postal Act for any other person to open such an envelope Please find attached an Application Contact Status which I require your chosen employee to complete. I am sorry it runs to eight pages, but in order that I know as much about him or her as your bank knows about me, there is no alternative.

Please note that all copies of his or her medical history must be countersigned by a Notary Public, and the mandatory details of his/her financial situation (income, debts, assets and liabilities) must be accompanied by documented proof.

In due course I will issue your employee with a PIN number which he/she must quote in dealings with me. I regret that it cannot be shorter than 28 digits but, again, I have modeled it on the number of button presses required to access my

account balance on your phone bank service.

As they say, imitation is the sincerest form of flattery. Let me level the playing field even further by introducing you to my new telephone system, which you will notice, is very much like yours. My Authorized Contact at your bank, the only person with whom I will have any dealings, may call me at any time and will be answered by an automated voice service:

Press buttons as follows:
To make an appointment to see me.
2. To query a missing payment.
3. To transfer the call to my living room in case I am there.
4. To transfer the call to my bedroom in case I am sleeping.
5. To transfer the call to my toilet in case I am attending to nature.
6. To transfer the call to my mobile phone if I am not at home.
7. To leave a message on my computer, a password to access my computer is required. Password will be communicated at a later date to the Authorized Contact.
8. To return to the main menu and to listen to options 1 through 7
9. To make a general complaint or inquiry. The contact will then be put on hold, pending the attention of my automated answering service. While this may on occasion involve a lengthy wait, uplifting music will play for the duration of the call. This month I've chosen a refrain from "The Best of Woodie Guthrie: "Oh, the banks are made of marble, With a guard at every door, And the vaults are filled with silver, that the miners Sweated for."

On a more serious note, we come to the matter of cost. As your bank has often pointed out, the ongoing drive for greater efficiency comes at a cost which you have always been quick to pass on to me. Let me repay your kindness by passing some costs back. First, there is a matter of advertising material you send me. This I will read for a fee of $20 per
page. Inquiries from the Authorized Contact will be billed at $5 per minute of my time spent in response. Any debits to my account, as, for example, in the matter of the penalty for the dishonored check, will be passed back to you. My new phone service runs at 75 cents a minute. You will be well advised to keep your inquiries brief and to the point.

Regrettably, but again following your example, I must also levy an establishment fee to cover the setting up of this new arrangement.

May I wish you a happy, if ever-so-slightly less prosperous day?

Your Humble Client,
(Name Withheld)

21. Reference: Deepanjali Bhas, "**Pilferage can make stores vanish**," The Times of India, New Delhi, March 21 2002

Pilferage can make stores vanish

Bangalore: Shrinkage management may sound like preventing clothes from shrievelling in the wash but it is actually retail parlance for what we commonly call shoplifting.

For any retailer-be it Wal-mart, K-mart, Mark & Spencer or our very own Foodworld, Shopper's Stop and Lifestyle- it is something dreaded and inevitable.

Best performers stand at 0.2-1.5 per cent of the total sales, worst performers are between 5-10 per cent and average performers are at 1.1-2.2 per cent, as per US retail industry figures.

And Indian retailers, too, are trying hard to minimize the shrinkage pinch.

A shocking case in recent times was the shutdown of swanky supermarket Nanz in Delhi, reportedly due to consistent shrinkage levels as high as nine per cent.

With modern retailing designed to be a pleasurable experience, the new stores have done away with checking bags at exit counters.

And with attractive display of merchandise and unrestricted customer movement (something analogous to availability of seamless information), some items just get easier to steal.

Electronics surveillance systems (EAS) are in place and have proved to be a deterrent. But Shopper's Stop CEO Nagesh says internal pilferage (done by shop staff or in connivance with them) still happens.

Professional shoplifters are aware of how EAS functions and are able to bypass it. Then there are shoppers who get into this just for the heck of it.

Shopper's stop, too, goes by the global provision of 0.5-0.75 per cent of global sales as shrinkage but very often, the actual figures are three times higher. Most shoplifters in the store are women from respectable families though there have been instances of children being caught too.

"Vulnerable departments are hair and fashion accessories, small leather items, tops, lingerie and trousers. Sometimes, men are also caught stealing expensive garments," says Nagesh.

The advantage for a big store like Shopper's Stop is that they can have 100 per cent securitisation of merchandise through sensomatic security tags where if an unbilled item is taken out, alarm signals ring at the exit.

Planet M uses garrison covers with 'locks' that can only be removed by staff.

Internationally, ink dispenser tags have come in, wherein ink spills on a product if the tag is pulled out erroneously. But for retailers like Foodworld, sometimes the prices of much of their merchandise do not justify the use of these expensive tags.

Oscar Braganza, president, Foodworld Supermarket Ltd., says it carries out a rigorous perpetual inventory (Integrity) every day on a predetermined category calendar.

And what about small retailers? Unfortunately, they haven't realized the gravity of the issue, says Sreedevi Jayakrishnan, senior consultant, Retail Management Consulting (RMC).

"Most stores don't even know what their pilferage levels are since they don't install the necessary software," she says. In a kirana store where margins are low, average losses from shrinkage can be huge.

22. Reference: Column "Straight Answers" from Ajit Wadekar, Former India Cricket Captain on "the necessity of third umpires" in Delhi Times Edition of The Times of India dated May 9, 2002. Column contributed by Shahnawaz Islam.

"**Q**: In the light of the controversial decision in the third Test against the West Indies, does it make sense to have third umpires?

A: I think that the decision (when Carl Hooper was not given out despite TV replays showing he was out of the crease) was wrong. In a sense, it was a repeat of a previous incident involving Shvnarine Chanderpaul – that, too was a wrong decision. I can't say why third umpires make mistakes despite the use of technology but, yes, technology – including replays – is needed because, sometimes, the action on the field is so fast that umpires on the ground can't decide what to do.

Q: Despite the use of technology, why do third umpires make mistakes?

A: They do, and the errors appear stupid. The charm of the game has already been lost with extensive use of technology. But then, errors are still being made on the field despite the best precautions. What could happen is that match organizers will try to promote local umpiring. And these local umpires might be biased.

Q: Does that mean that the third umpires, too, should be from a neutral country?

A: We know for a fact that even neutral umpires make mistakes – so there is no reason why a neutral third umpire can't do the same thing. But, yes, it might help.

Q: So, what can be done to correct decisions?

A: Well, you could forget about the whole issue, remove the third umpire and the match referee, and restore the game to its original form. Or, you could impose penalties on umpires who make wrong decisions so that they won't make same mistakes again.

23. Reference: Associated Press (AP) report entitled "Penthouse apologizes to Anna" in The Times of India dated May 9 2002 Thursday.

"New York: *Penthouse* magazine apologized on Tuesday for misidentifying topless pictures of the daughter-in-law of fashion designer Luciano Benetton as those of tennis player Anna Kournikova.

"We deeply regret this unintentional error and offer our heartfelt apologies to both women," the magazine said in a statement.

Later on Tuesday, a spokesman for the management firm that represents Kournikiva said she filed a suit in federal court in Los Angeles and General Media Communications Inc., owner and operator of Penthouse.

"The complaint is for defamation, false light invasion of privacy, misappropriation of identity and various other violations of Miss Kournikova's rights under federal state and law," said David Schwab of California-based company Octagon, which represents the 20-year-old tennis player.

Penthouse's statement was released a day after Judith Soltsez-Benetton sued the magazine seeking a minimum of $10 million in damages. Her attorney, Judd Burtstein, claimed the magazine knew about the mistake weeks ago, but published the photos anyway.

In response to Soltsez-Benetton's suit, US district judge Denny Chin ordered the magazine to temporarily stop distributing the June issue to newsstands and blocked it from putting pictures on a Web site.

24. A Report as it appeared on MSN Web Site on May 29, 2002

Hospital Drug-Error Trends Continue

New Report Finds Old Problems, but a Willingness to Change
By Daniel DeNoon

May 24, 2002 -- Hospitals are still making too many mistakes when giving medicine to patients, a new report shows. Relatively few of these blunders hurt anybody. But when they do, they can be deadly.

The findings come from the second annual medication-errors report from MedMARx, an anonymous program that keeps track of this kind of mistake.

The most common errors were not giving the right drug, giving the wrong dose of a drug, or giving an unauthorized drug. The drugs most often involved are insulin (a diabetes medicine), heparin (a blood thinner), and morphine (a potent painkiller).

"These recurring trends indicate that while progress in reporting errors is being made, the same types of errors are occurring again and again," Diane D. Cousins, RPh, says in a news release. "This tells us that there are deeper, more systemic causes for these errors. These systems need to change in order to reduce errors." Cousins is a MedMARx vice president.

The current report covers the year 2000. Among the 184 participating healthcare facilities, there were 37,999 definite errors and 3,297 possible errors.

Only 3% of the definite errors actually hurt patients -- but that figure represents 1,233 injured people. Three of them died.

Distractions, too much work, and inexperienced staff remain the most common reasons for medication error.

Fewer hospitals participated in the 1999 report, so the 2000 report isn't directly comparable. Still, there were about 111 error reports per hospital in 1999 and about 224 error reports per hospital this year. MedMARx suggests that much of the increase is due to better error reporting.

The scope of medical errors came to light in 1999 when the Institute of Medicine of the National Academy of Sciences published a report titled *To Err Is Human.* The scientists estimated that as many as 98,000 hospital patients die every year as a result of preventable errors, including medication mistakes.

Since that time, everyone from the U.S. president to doctors to entrepreneurs have called for an array of systems and technologies designed to prevent errors or catch them before they can harm the patient.

Cousins thinks all the attention to medical errors has resulted in some noticeable changes: "This second MedMARx report provides a strong indication that health care professionals and institutions are more willing to report errors and to understand that they can learn from the mistakes of others," she says in a news release. "We hope that this trend continues and that these entities get support -- both legislatively and

professionally -- for the important work they are doing in reporting medication errors."

25. Reference: The Times of India, New Delhi March 25, 2003, News Item entitled: "Students taught wrong syllabus." Report by Anuradha Mukherjee, Times News Network.

New Delhi: Three students of Raisina Bengali Senior Secondary School, Chittaranjan Park, were in for a shock when they appeared for the Bengali elective paper.

The questions were completely unfamiliar.

While the school had enrolled the three Class 12 students with the Central Board of Secondary Education (CBSE) as candidates for the Bengali elective paper, their teacher taught according to the Bengali core syllabus.

The School's excuse for not detecting the mistake was a delay in receiving the elective syllabus from the CBSE.

"My child was being taught by an ad hoc teacher, Sheela Chakraborty. She taught them according to the core curriculum instead of elective. When the children saw the paper, they realized they were not familiar with it," said a parent.

The students then approached the center in-charge who then contacted Raisina School principal Subrata Sen and the CBSE.

"At 1 pm, we were given the Bengali core paper. But we are not sure if that is going to be accepted by the CBSE," said a student.

She said they could not spot the problem as the subject books did not mention if they were core or elective course books.

"Our teacher had arranged the books from Kolkata," she said.

Sen admitted the school made a mistake, but said it had been rectified.

"Teachnig the core curriculum was our mistake and we have sacked the teacher," he said.

He said the confusion arose after the Bengali syllabus was changed in 2001. "We got the syllabus from another school. It turned out t6o be t6he core syllabus. The teacher failed to tally it with the CBSE curriculum," he said.

Even the exam committee could not spot the mistake.

CBSE controller of examination Pavnesh Kumar said the students were allowed to appear in the examination on the School's plea that the wrong subject code was entered.

"We give them ample scope for correcting mistakes in the candidates' list. But why penalize the students?" asked Kumar.

He was unaware that the wrong course was taught. He said he could not comment on if they received the syllabus late, but it was the school's responsibility to ensure the right course is taught.

Note: 1. Core issues as identified by the reporter

- Students of Bengali elective at Raisina School were taught the core syllabus by mistake.
- Students realized this on receiving the CBSE paper.

- CBSE allowed the students to appear for the core paper later.
- Teacher sacked.

2. Of course, there are further issues, too, as follows

- Education objective is students achieve expected learning outcome in the desired course. In this case, the desired course was the elective course syllabus, but what students were taught and evaluated is for core course. Hence even when students will be declared pass or fail, it will not be with respect to the expected course syllabus. That is education goal is not achievable right from the day the teaching- learning process began. The case of loss of goal integrity.
- When the course syllabus was changed in 2001, why did the school not get it from CBSE? Incidentally, this school is a well known and standard school. Further, even when it got the syllabus from another school, why it was not validated if the syllabus obtained was correct? The case of loss of process integrity and as a result also of output (information on syllabus) integrity.
- Even if the School received the syllabus from CBSE after a delay, why was it not validated with what was being taught?
- Of course, why did the CBSE provide the syllabus after a time delay, which must have created time pressure on the school when it came to start classes?
- Why did the teacher (so what s/he was ad hoc) fail to tally the book content with the CBSE curriculum?
- Why did the book not carry information as to for which courses and under which board, its contents tallied with the syllabus?
- How did CBSE controller of examination wrongly permit the students to take the examination?
- By letting the School to off by saying incorrect subject code was entered, was the school not encouraged to give false information?
- How was the teacher punished alone? Would it have been the case if the teacher would have been a permanent staff?

26. Some statistics:

- Virtually every company or organization, no matter how small, is a potential victim of computer crime. The explosive growth of computers, together with the escalating value of the data handled and stored, prompts many authorities to predict that criminal computer capers will, if unchecked, increase significantly in years ahead. Estimates of losses due to computer crime vary from $ 300 million to $ 5 billion (a 1982 estimate). Even the lower figure here is more than 20 times the annual take of just a decade ago. Complicating matters, many experts believe that only 10 % of computer crimes are made public and numerous crimes probably go undetected.
- Errors result in loss of integrity, which in turn has potential for delivering unsatisfactory and, in situation, dangerous or even harmful service to the customer (external as well as internal) and environment. Accounting errors, though publicized, are not the only business errors. Here are mentioned few other errors.

- The American Institute of Certified Public Account (AICPA) has conducted one of the few scientific studies of the characteristics of computer crime. Of 85 bank cases studied, 13 involved fictitious loans, 8 involved unauthorized lines of credit, and the rest involved various forms of transaction manipulation. Most of these crimes have not been of the spectacular variety, with 70% yielding less than $ 25,000.
- Computer criminals also favor insurance companies. In fact, one of the largest computer crime so far discovered – totaling over $ 27 million, though actual losses may never be known – is the equity funding fraud. From 1965 to 1971, the company used its computer to write thousands of phony insurance policies, and then sold those policies to companies called re-insurers. According to the AICPA study, other kinds of insurance computer crime include fictitious claims, fraudulent loans against customer policies, and the switching of address and canceling of policies to gain premium refunds.
- After theft of cash or assets, the most common computer crime is stealing goods, since inventory items are often easily converted to cash. Falsified computer records can make it seem that goods were damaged and disposed of, shipped to a customer but returned, or simply missing.
- In January 1968 during a storm, the roof of the cafeteria of a Junior High School in Charlotte, N. C., which had stood for some four years, experienced accumulation of four in. of snow and ice (*system environmental factor*) resulting in the collapse of 4200 ft^2 of roof (unsafe structure). Subsequent investigation into the structure failure showed that the roof framed with open web steel joists had two of the columns under the girders *omitted* when the construction plans were finalized to incorporate fireproofing (change) requested by the insurance division during state review (integrity loss at various stages - loss of Design Integrity, Review Integrity, Implementation Integrity). The architects publicly admitted the drafting error (*cause for business loss*) when they checked the plans following the accident, which came after the cafeteria had been in use for over three years (*i.e. with delay*).
- Also, at the Los Alamos National Laboratory, an electronics technician was troubleshooting a live power supply in a laser system when his elbow contacted a metal top as his hand touched an energized electrical source, resulting in burns at the touched areas and in mental shock (three days lost time). Suspecting trouble, the experienced technician had placed one hand behind his back. No warning light had been assigned to the power supply to indicate when it was energized.
- In yet another case of non accounting error a report in USA Today Monday July 29 2002 entitled “Miners saved in dramatic rescue” observed even as all (nine) miners were safely rescued, investigators were trying to find out why maps indicated the miners were a safe distance from a flooded 1950s mine and officials saying they would review how mining permits are issued and accuracy of old maps.

- And another case is that of dancer Mrs. Perkin (34) who was left paralyzed after suffering a heart attack during the birth of her baby, Dylan, at the Farnborough Hospital in Orpington, southeast London, in November 1996. She now needs care 24 hours a day. As reported in The Times Tuesday October 15, 2002, she received profoundly substandard care. She had suffered a fit, which had led to a cardiac arrest. But staff seemed to enter into a state of panic and did nothing useful or constructive. It had been four minutes before they had called for help, some five to six minutes before attempts had been made to resuscitate, and some nine minutes before the crash team had arrived. To ultimate misfortune, the crash team could not get onto the ward because they did not know the security combination to the locked door. On October 14, 2002, as per The Times report, Bromley Hospitals NHS Trust agreed to pay Mrs. Perkin a lump sum of 7 million pounds, with another 5 million pounds invested to produce 250,000 pounds a year for life.

27. **Auditors: Who fiddled what?,**

Reference: "Auditors: Who fiddled what?", Finance and Economics section of The Economist, December 22nd 2001, pages 83-84.

An extract from above reference

"Errors of judgment" are piling up at Anderson.

Auditing is a dull business. But it is also dangerous, as Andersen, the world's fifth-largest firm of accountants, is finding out. Andersen audited Enron for all 16 years since the company's formation. On top of pure audit, it also sold internal-audit and consulting services. But despite this privileged insight, Andersen did not spot the fact that Enron was publishing incorrect financial statements. For failing to do its job, Andersen now faces the wrath and legal claims of thousands of staff, shareholders and creditors who will lose billions from Enron's collapse.

In November, Enron announced that it would restate all its annual financial statements from 1997 to 2000, resulting in cumulative profit reduction of $591m and increase in debt of $628m. The reason, it said, was that it should have added in three off-balance-sheet entities, vehicles used by some companies to acquire more capital without adding debt to their balance sheets.

How could Enron's auditor have missed all of this at the time? Joseph Berardino, Andersen's chief executive, admitted to congress last week that his firm made an "error of judgment" over on of the vehicles. But most of Enron's restatement, he said, came from a bigger special "special purpose" vehicle called Chewco: Enron's management did not provide the information

about Chewco that would have led Andersen to insist on its consolidation. He said Andersen warned Enron's audit committee about "possible illegal acts".

Enron is fighting back. It says that it not only discovered and reported relevant information on Chewco to Andersen, but that Andersen was involved in "real-time" audit procedures on all of its man structured-finance vehicles. If Andersen is found actually to have advised on the design of Enron's off-balance-sheet vehicles, as the company implies, it will find hard to plead ignorance over their construction.

The Securities and Exchange Commission (SEC) is investigating Andersen's audit work on Enron, and lawsuits have been filed against the firm; doubtless more light will be shed on what happened. But already, some observers are questioning whether Andersen will survive in its present form. This year, the SEC imposed a $7m fine on Andersen for signing the accounts of Waste Management, another Texas firm, knowing that the accounting methods it had used were designed to mislead investors. In the spring, Andersen paid $110m to settle an accounting-fraud lawsuit over auditing work it did for Sunbeam, a Florida consumer-products company that filed for bankruptcy. [Cases of loss of integrity in audit design and implementation – here due to process and judgmental errors – are thus not singular events but recurring]. Given all these cases, it is even possible that the SEC may bar Andersen from taking new audit clients for a time. If plaintiffs are successful, the firm may have to pay out many more millions in compensation.

Mr. Berardino's defense, beyond accusing Enron of withholding information, is that the accountancy profession as a whole is at fault, and a few others as well, such as credit rating- agencies and investment bankers. The heads of the other "big-five" accountancy firms joined in: the standard setters are too slow, they said, and failed to produce adequate rules on off-balance-sheet vehicles; the financial reporting model is outdated and there should be firmer regulation and discipline, and improvements to audit effectiveness.

There is truth in this, but it remains to be seen how much change the American accounting profession will accept…… Will auditors blow the whistle on future Enrons?……. The worst outcome of the Enron affair, for accounting firms would be that regulators ban them from selling consultancy services to those they audit. Big firms worry that if they were left with audit alone, which for most people is a tedious task, their ability to recruit talented staff would evaporate-and they may as well hand the job to a government agency……."

28. Reference: **The Wall Street Journal** Thursday, October 11, 2001, Page A2, Section: Economy

Three Americans Win Nobel for Economics

Citing Faulty Information, They Challenge Theory Of Efficient Markets

By
Jon E. Hilsenrath, Staff Reporter of The Wall Street Journal

The Nobel prize for Economics was awarded to three Americans who challenged an assumption that has underpinned economic theory ever since Adam Smith wrote of the "invisible hand" that guided human behavior. That theory: Markets operate efficiently.

In awarding the most coveted prize in economics to to George Akerlof, 61 years old, of the University of California at Berkeley, Michael Spence, 58, of Stanford University, and Joseph Stiglitz, 58, of Columbia University, the Royal Swedish Academy of Sciences is tipping its hat to economists who subscribe to less laissez-faire principles.

The three, who will share the nearly $1 million award, have long argued that markets don't always operate efficiently because buyers and sellers don't always have access to the information they need to make optimal choices. "There are all kinds of reasons why liberal economists say that markets are inefficient and that we must replace the invisible hand with a visible hand," said Jagdish Bhagwati, an economics professor at Columbia and former classmate of Messrs. Akerlof and Stiglitz. "These guys found a new reason for inefficiency in markets that people had not thought of: imperfect information."

To some, this line of reasoning, which is based on theories of so-called asymmetric information, amounts to an economic argument for more government regulation, which many free-market economists abhor. The thinking goes that if imperfect information sometimes distorts markets, then governments sometimes need to fix those distortions.

Mr. Akerlof helped to pioneer this branch of economics with a 1970 paper called "The Market for 'Lemons.'" That paper explained why it was difficult for used-car sellers to make a market for their products when buyers were so uncertain about what problems resided under the hoods of different vehicles. "If you are the buyer of a used car, you have to be suspicious of the motives of the person who wants to sell the car. But if you are a seller, you feel that you can't get the price that you deserve," Mr. Akerlof explained yesterday in an interview.

Mr. Stiglitz wrote a series of papers explaining how such information uncertainties led to everything from unemployment to lending shortages. As the chairman of the Council of Economic Advisors during the Clinton Administration and former chief economist at the World Bank, Mr. Stiglitz

was able to put some of his views into action. For example, he was an outspoken critic of quickly opening up financial markets in developing countries. These markets rely on access to good financial data and sound bankruptcy laws, but he argued that many of these countries didn't have the regulatory institutions needed to ensure that the markets would operate soundly.

Mr. Spence explained how market participants sometimes adjusted to information shortfalls by using what he called "signaling." Employers, for instance, often rely on the educational background of job hunters as a sometimes imperfect signal of how productive they might be as workers.

The strongest proponents of efficient markets in recent years have been at the University of Chicago, which dominated the Nobel Prize award for much of the 1990s. But the economics profession might be gravitating slowly toward a concern with market inefficiencies. In April, for instance, the American Economic Association awarded its prestigious John Bates Clark medal – for leading economists under 40 – to Mathew Rabin, a University of California at Berkeley economist who has developed mathematical models to explain why people do irrational things like procrastinate.

Gary Becker, a Nobel laureate and economist at the University of Chicago, said he agreed with this year's winners that markets are sometimes inefficient because of bad information. But he said that doesn't lead logically to a call for more government intervention in markets. "Governments face asymmetric information too, and they do things for a variety of reasons," Mr. Becker said. "I believe the government generally makes things worse."

The award won by Messrs. Akerlof, Stiglitz and Spence is formally called Bank of Sweden Prize in Economic sciences in Memory of Alfred Noble.

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