

Y2K: Countdown to Doomsday?

by Masroor Ahmed Deepak

The telephone company would produce outrageous 'phone bills (as if they don't send fictitious bills anyway). Businesses would come to a screeching halt. A complete meltdown of database in the banks, house building societies, tax departments, BRTA and every other service oriented industries would take place.

WHAT really is the Y2K? All computer programs everywhere in the world will go on strike on January 1st 2000. Just give this, dear readers, a moment's thought. Can you imagine what sort of chaos this might truly cause? Though no one pays much attention to our traffic lights, still they would be completely non-functional. Even if your electricity bills are up to date yet there would be no lights in your house and company. Industries would not produce goods and neither would any goods be delivered to the stores. The telephone company would produce outrageous 'phone bills (as if they don't send fictitious bills anyway). Businesses would come to a screeching halt. A complete meltdown of database in the banks, house building societies, tax departments, BRTA and every other service oriented industries would take place.

Scary eh? Indeed. Could such a catastrophe happen, especially in our country? Well, if you think about the consequences, then you'll decrease the likelihood of this unsettling event. If you ignore this warning, or fail to ask yourself the question - "Could this happen?" then you become a part of the problem.

How could computers possibly go on strike? The explanation is very simple. After December 31st 1999, computers won't know what year it is. This sounds crazy, right? It sounds like a Science Fiction story. But it is true.

Here's why. Programmers have programmed computers to store the date in the following format dd/mm/yy. This means that they have allowed 2 digits for the day (dd), 2 digits for the month (mm) and only 2 digits for the year (yy). Can you see the problem? No? Then some examples might help.

I was born on July 19th, 1971. So we store that information in the computer as 19/07/71. The Wright Brothers achieved their first flight on December 17th 1903 and that's

stored as 17/12/03. When we get to January 1st 2000 we'll store that information in the computer as 01/01/00. See the problem yet? We've told the computer to assume that 19/07/71 means 19/07/1971, and that 17/12/03 means 17/12/1903. If that is the case then what will it assume 01/01/00 means? It will assume that 01/01/00 means 01/01/1900 or January 1st 1900. That's it. That's the problem. The computer, all computers, will think that all 'dates' past December 31st 1999 are 100 years in the past.

So What? To understand the implications of this little error, we must look at one of the most basic, and most common, calculations performed by the computer. The calculation that determines how much time has passed from one event to the next. For example, how old are you? I was born on July 19th 1971. If I ask the computer how old I am, it subtracts my birth-date from the current date. So it'll perform a calculation similar to 99-71 (remember it only has 2 digits for the year information) and gives me the answer of 28 years old. Which, while unfortunate, is also true! On January 1st 2000, the calculation will be exactly the same. Subtract my birth-year from the current year, 00-71 and the computer will loudly and proudly proclaim that I'm -71 (minus Seventy-one) years old. Which is silly, and wrong, and worse, because with every type of interest calculation in every program in every company in every country, it affects more than just interest calculations. It affects all information based on time. When will your driver license expire.

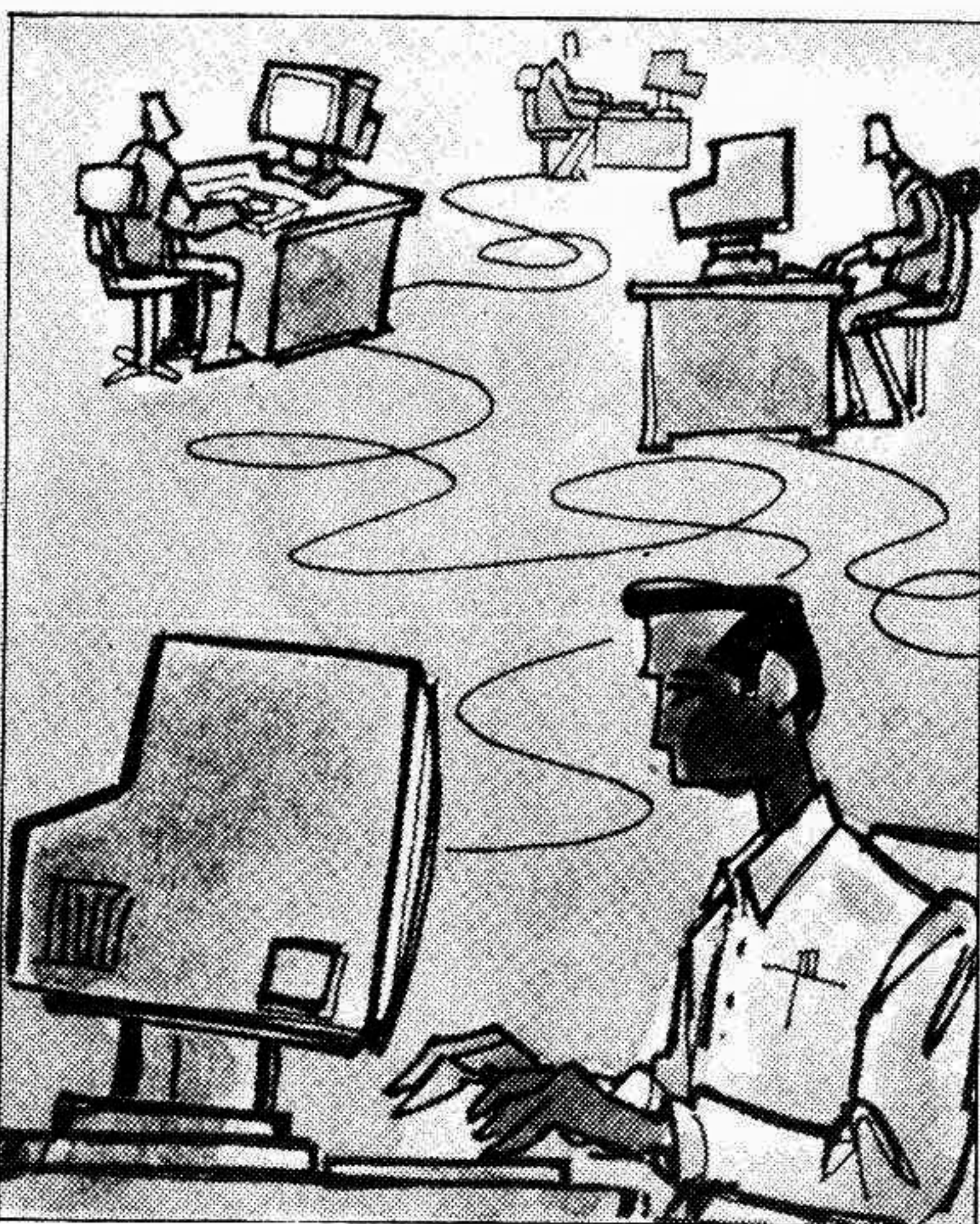
If I were a mind reader I'd say the thoughts in your head at this moment would be a collection of "How could computer programmers be so stupid? Didn't they know the year 2000 would arrive? Why didn't they store all 4 digits for the year?" and last, but not least, would be "Well, just put the extra digits back into the program! How difficult could that be?" These

are very natural responses from anyone just hearing about the Year 2000 Computer Date Crisis.

The listener becomes even more suspicious when I mention that the estimated costs of fixing this problem are upwards of \$600 billion (US) worldwide. \$600 billion to fix 2 missing digits, otherwise all the computers worldwide go on strike?

Let's answer the obvious questions. "Why did we use only 2 digits when we knew we'd need 4 of them when the Year 2000 rolled around?" Well, the bad news is that we did it deliberately, but with the very best of intentions. When computers first entered the business world in the late '60s and the early '70s, they were very expensive. This 'expense' was tied directly to two aspects of computing. How much data could the computer store and how fast could it process that data. Even tiny, incremental increases in either attribute resulted in huge cost increases. One way to store data, was on a piece of stiff cardboard known as a Hollerith card. By literally punching holes into this Hollerith card according to a set of patterns, and reading those patterns with a beam of light, one could store and retrieve information. Each of these cards had enough space to hold only 80 characters of information. Eighty characters is not a lot of information. Write down your full name, address, birth date, bank balance and bank account number. The chances are very good you'll have written down more than 80 characters. Which means you'd have trouble storing all the necessary information onto a single Hollerith card.

This is exactly the problem programmers ran into in the late '60s and early '70s. Hollerith cards were not big enough to store all the data they needed



to store. So they compromised. They wrote 190771 instead of 19/07/1971, thereby saving themselves 4 precious characters.

When designing a computer application we're always making compromises. There are compromises between what we'd like the computer to do and what we can afford. We compromise between the speed of delivery and the quality of the final product. Hopefully, we understand the consequences of

the compromise, because compromises are never perfect solutions. We compromised on accuracy vs. cost when we decided to store only 2 digits of the year. Our reasoning, even now, makes a lot of sense. Especially if you keep in mind when this compromise was taking place. It was the '60s and '70s, when the year 2000 was 30 or 40 years away! Part of our reasoning was that surely our code would be replaced by then. We assumed that the program we were writ-

ing in the '60s would not be in use 30 years from now. That particular assumption was wrong, very wrong. We have way too much old code, known as 'Legacy Systems' in use today. Major applications are still using code developed in those early days. Another interesting fact to take into account is that the programs were written by programmers who themselves were most likely less than 30 years old. Surely their code would not last longer than they'd been alive? It seemed a very reasonable compromise to make at the time.

This compromise became an industry standard. Computers have remained very expensive until only the last decade when it became possible for nearly anyone to purchase a computer for their home. These home computers are much more powerful than the computers used by entire businesses in the '70s. Trouble is, while computers changed, the standard didn't.

When someone makes the statement "Put the 2 digits back in," they're making an assumption. The speaker is not even aware of the assumption they're making, which makes it all the more dangerous. The assumption is that we know where the dates are. That's right. We don't know where the dates are, we have to go find them. Finding them is a large part of the problem, for two reasons. First, do you have any idea how much programming we've done in the past 30 years? It is not unusual for a company to have more than 100,000,000 lines of code! (assume your company has 100,000,000 lines of code.) 100,000,000 is not a number we run into very often, and it's rather difficult to get a sense of just how much work that represents. How long would it take you, to just look at all that code, if you spent just one

second on each line? Assuming 8 hours a day, 5 days a week, it would take you just over 13 years to look at all your code. Or it would take 13 people one year. Or 156 people could do it in a month. So the haystack we're searching, to find all these little date needles is huge. The problem though, is more than just the sheer size of the haystack. The problem really lies in the next, almost philosophical question. What's a date?

That's not a facetious question. It's very serious. It sits at the heart of this whole problem, and if we had a clear, 100% accurate (and useful!) answer then the problem would be much easier to solve. To understand the complexity of the question "What's a date?" we need to understand a key concept regarding computers.

Computers are idiot scholars. They perform miraculous tasks, but have no understanding of what they're doing. One way to describe computers is to assert that they are nothing more than symbol manipulators. The symbols themselves have no meaning to the computer. The symbols might mean something to us, but to the computer they are 'just' one and zeros being manipulated according to the rules we've defined.

When the computer subtracts 71 from 00 and offers the result of -71, it does so, following the rules of arithmetic and does so correctly. The answer it provides is arithmetically correct. It's correct until we decide those numbers represent years and since these numbers don't contain all the necessary year information the answer is meaningless.

It's meaningless because 00 should represent 2000, but we have instructed the computer to 'assume' that 71 represents 1971 and also that 00 represents 1900. Here are two more 'solutions' to the problem. Create another bit of data known as the 'century' indicator. If the indicator is set to 0 then the year of 71 refers to 1971, if it's set to 1 then 71 refers to 2071. This is a little bit more compli-

cated and takes more time to communicate. It also creates a second problem. Will all companies use 0 to indicate '19' or will some of them use 0 to indicate '18' and 1 to indicate '19'? Another solution, much more complicated to explain and therefore much more susceptible to error is to use 'date logic' to have the computer determine the proper century. For example, if I'm entering in new birth records to the computer for the purposes of enrolling students into kindergarten, then I can assume that any year greater than 90 is a '19th' year and that those less than 10 are '20th' years. Of course I'd either have to update this 'date range' on an annual basis or have the computer change the range depending on the current date. There are other more esoteric solutions to the problem. None simpler than what we've already described and all suffering from the same failing... there are still 100,000,000 lines of code to change in your company.

So no matter which solution you choose, you're still left with 100,000,000 lines of code, containing an unknown number of errors, that are difficult to identify, and have to be fixed by December 31st 1998, 1999? That's another part of the bad news. No matter how much code you have, no matter how much budget you have available for this task, no matter how skilled you are at the conversion, you have the same deadline.

You must be completely by this date so you can test the hundreds of thousands of changes you'll have made to your applications. You'll need a full year of testing because you need to test the full suite of applications required to process the full fiscal year for your company. You must do this before the year 2000 because, it is risking the business to discover errors when you have no idea how long it will take to fix them.

Meanwhile your production line is stopped, you're unable to bill your clients or ship your product, because the programs which drive these functions are not working.

Indo-Romanian Relations after Ceausescu

by K Gajendra Singh

Traditionally Romanians have great love for India, its history, culture, religion and spirituality. Over centuries thousands of Indian books or on India were translated. Rabindranath Tagore, who visited Romania is a household name. Sanskrit has been taught at universities since last century. Poets and intellectuals like Eminescu, Eliade and Al-George have brought Indian philosophy, religion, art, history and poetry to Romanians and acted as interpreters to the West.

RADIO Liberty and Free Europe and western media during Cold War had convinced most Romanians that they were the lost Christian brothers whom West wanted to liberate from the clutches of the tyrannical atheist communist regime of bloodsucking Dracula nicolae Ceausescu. Those who could go West returned with glowing stories of freedom and of shops full of unimagined goodies. When the regime televised a Hollywood soap opera to highlight western decadence, Romanians instead took it that once they got democracy with capitalism everyone would live in luxury with only boardroom and bedroom battles to take care of and life would be a round of night clubs, bars, soda fountains and bowling alleys. But the reality has turned out to be very bitter, harsh and brutal leaving them confused and disoriented, selfish and unfriendly.

It was preached and fervently hoped that market-driven economy will usher in unlimited prosperity. Yes, for 5/6 per cent of the population, (who live as in Europe Union and think Euro-currency); wheeler dealers and unscrupulous smart Alees, most enhanced in power since communist era or exploiting old party network and new elected ones. But for the majority, victims of a free fall of 40 per cent in GDP since 1990, life is a dreary unmitigated misery with falling employment, rising inflation, pensions of retired professors military officers, engineers reduced to \$50 per month and prices at par with West Europe. Yes, the shops are

full but, only to watch for the majority. An industrialised Romania is fast getting Africanised into an exporter of semi-finished goods. Social engineering in reverse has reduced socialist middle class and intellectual elite to penury and starvation.

Except for those from foreign trade ministry and state export companies the rest had no idea at all of how to trade, run a business or industry. So they are learning by doing the hard way. Many set up rows after rows of snack shops, casino bars and kiosks selling the same soft drinks, beer and hard liquors with fancy names like Sheriffs, Texas, Hollywood, Palindam or Che Gabi. But unlike Hollywood serials there are few customers. Many which had opened with great fanfare and glittering facades have downed shutters. Now deserted and abandoned along with silent and rusting industries they have become symbols of the vanquished in the Cold War. And living examples of Romanians' American dream coming unstuck.

Since last two years the so-called reform coalitions are perpetually squabbling in and out of Parliament, fighting for jobs for their cronies (govt servants are party members). Barring few, professors like President Constantinescu and others who are hapless and ineffective, others have public assets into their own names or of their friends and relatives with everyone looking for a fast buck. There is little transparency in privatisation or elsewhere leading to unfair practices. With in-

sider trading the stock exchange has become moribund. Even in acute economic austerity, a minister wanted to order Bell Helicopters for \$2 billion, even embarrassing USA. When accused of kickbacks he fished out the draft contract on TV showing that it did not include any commission clause. President's own Security chief was involved in large scale systematic smuggling of aircrafts full of contraband cigarettes through a military airport. A well meaning President and Prime Minister, another professor, unable to comprehend, lacking the will and resolution prefer travelling abroad to avoid facing problems at home.

The winding of life savings of millions in get rich quick pyramid scheme in Cluj up North with the regime's connivance and perhaps participation are living examples, but lotteries still do a thriving business. Mafia attracted from Italy, Greece, Turkey and elsewhere have linked up with officials and are spreading its tentacles. Little has been done to establish property laws, banking regulations or stock market, a necessity for the Milsonian system of laissez faire. The banks are to enrich the politicians and their cronies. For business visitors and tourists the worst are the taxi drivers of Bucharest, always ready to make a killing, reasonable cabbies charge only four times, many extorting \$100 from the airport for a \$10 trip.

There is an upsurge of racism against Arabs and Asians and anti-semitism, for was kept in check under communism. And there is no recourse or law. The establishment seem to imply OK you wanted freedom, democracy and capitalism. You have it.

Yes, there is a democratic constitution, multiparty system, liberal and global economy. Eight years after the dictator was hanged without a proper trial, shops are full of imported goods and the country is now agglitter with symbols of victor superpower and its ideology. Instead of huge wall sized posters of a youthful looking Nicolai Ceausescu staring at you, there are signs of Coca Cola, Macdonalds, KFC, Daewoo and Sony. Romanians can have passports for the asking but get visas. They are unwanted in West and if they do reach there are promptly deported back.

The massive tourist infrastructure built by Ceausescu is being eroded, dismantled and destroyed fast. In the absence of maintenance, hotels parceled

among cronies, are falling apart but rents at par with West Europe which discourages businessmen and keeps tourists away from Romania's legendary fresco painted churches and monasteries, scenic sights, Black Sea beaches and winter holiday resorts. And now with economies collapsing in ASEAN, Russia and elsewhere, the investors are wary of investing any where, more so in Romania.

Traditionally Romanians have great love for India, its history, culture, religion and spirituality. Over centuries thousands of Indian books or on India were translated. Rabindranath Tagore, who visited Romania is a household name. Sanskrit has been taught at universities since last century. Poets and intellectuals like Eminescu, Eliade and Al-George have brought Indian philosophy, religion, art, history and poetry to Romanians and acted as interpreters to the West. The Indian Embassy has done a splendid job in keeping the flame of Indian culture alive by holding seminars, exhibitions, publication of books with a bust of Tagore having been recently unveiled at the prestigious National Theatre.

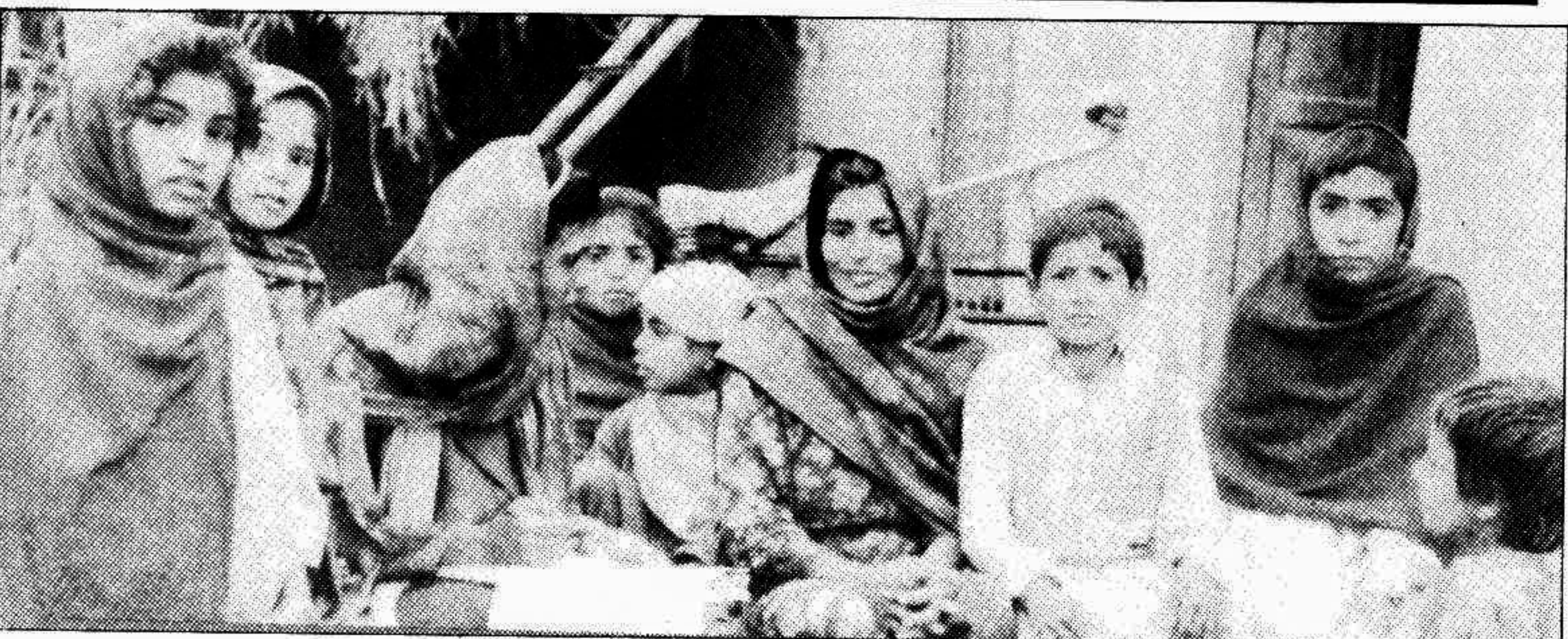
India always had a strong economic relationship with Romania, which helped her in oil and refining industry in 1950s. Romania was a major buyer of iron ore and supplier of urea, chemicals and steel products. In spite of many problems, because of its location, a big market of 23 million and a candidate for NATO and EU, it offers good opportunities to Indians to invest in pulp and paper, pharmaceuticals, furniture, textiles, steel, petrochemicals and fertilizers (with 30 million tons refining capacity).

Currently India is a major buyer of Romanian products which at \$177 million in 1996 (\$239 million in 95), were more than its combined exports to China, Japan and Korea or total exports to Latin America. But there are unnecessary hurdles in grant of visas to Indian businessmen, simply because some Romanian diplomats were trading in visas in its missions in Amman and Bonn etc. During Ceausescu era Romania always supported India on Kashmir but now it takes an equivocal stand, not on merits but perhaps to please USA, while it badly treats its own Hungarian minority in Transylvania, even objecting to setting up a Hungarian language university.

—Mandira
The author is a retired Ambassador.

Double Whammy for Women

Women are bearing the brunt of the economic crisis in Asia. As Boonthan Sakanond writes from Bangkok in this Inter Press Service special report, the recession is "redomesticating" the women.



Why is it always women who suffer?

As the Asian recession rolls on, women are being forced to make the maximum sacrifices whether in the family, the workplace or in school.

Asia's economic slump, now almost year and a half old, is also pushing more and more women to migrate overseas in search of work and take up employment in the commercial sex industry, say new studies.

Experts warn that without appropriate policies in place, decades of work done to improve the status of Asian women could be rolled back in the space of a few years.

"There is a distinct need for designing macroeconomic policies in Asia that are sensitive to the needs of women and which do not put the main burden of adjustment on this already disadvantaged group," says a paper by Jayati Ghosh of the Centre of Economic Studies and Planning at the Jawaharal Nehru University in New Delhi, India.

Her paper on women and economic liberalisation in the Asia-Pacific region was part of a discussion at a recent forum here on the impact of globalisation on women, organised by the United Nations Economic and Social Commission for Asia-Pacific (ESCAP).

While official figures on rising unemployment in Asia do not look specifically at the impact on women, there is growing evidence that in the industrial sector women in general, and older women in particular, are the first to bear the brunt of job cuts.

In Thailand, for example, where more than 300,000 people have lost jobs in the past year, trade union activists claim that a majority of retrenched employees are women.

"Women are considered easier to dismiss by many employers and so they are more vulnerable in times of crisis like the current one," says Voravith Charnonert, a labour economist and trade union adviser in Bangkok.

As Ghosh's paper points out, the possibility of easy dismissal was always one of the main reasons why women found employment in large numbers during the boom years of the eighties and early nineties.

She points to the widespread perception that female employees are more tractable and subservient to managerial authority, less prone to organise into unions, more willing to accept lower wages, less likely to expect upward job mobility and easier to dismiss using life-cycle criteria like marriage and childbirth.

According to the International Labour Organisation (ILO), figures in Indonesia between 1980 and 1996 show the percentage of women in the labour force jumped from 27.7 to 37.2 per cent.

In Thailand it went up from 49.5 per cent to 55.2 per cent in the same period. In China, another Asian country which has seen spurt in export-oriented industries, the number of women in the labour force increased from 48.9 to 55.6 per cent from 1980 to 1996.

While many of the jobs that women held during Asia's boom years were low-skill, low-paid and repetitive work, Ghosh's paper says that despite this, the increase in number of employed women benefited them socially and culturally.

Given the strong patriarchal traditions in most of Asia, the ability to earn outside income

was an important instrument for the transformation of gender relations, argues Ghosh. However, she says the economic crisis has tended to reverse the positive aspect of this process.

While on one hand, industrial women workers are losing jobs in the informal sector, there has been an influx of more women forced to take up low-paying, menial jobs due to falling household incomes. Worse still, there are worries that the economic crisis is pushing large numbers of women into the commercial sex industry, often in foreign countries.

"Both women and children, particularly the young girls, have become increasingly vulnerable to being tempted or coerced into migrating abroad in search of jobs," says Dr Saisuree Chutikul, a senator in the Thai Parliament and chairperson of several bodies working against trafficking in children and women.

"Unfortunately many of them will end up in the commercial sex establishments of countries like Japan and Taiwan," Saisuree points out.

Domestic workers, who make up the bulk of Asian migrant women workers, are also facing serious problems due to the economic downturn and subsequent drop in demand for their services.

In Hong Kong for example, Filipino domestic workers have been subjected to arbitrary wage freezes and even dismissals by employers citing the economic crisis as reason.

In the long run, Ghosh points out the greatest damage to the status of Asia's women may ultimately be due to the structural adjustment programmes sponsored by the In-

ternational Monetary Fund (IMF), which has extended more than \$100 billion to bail out economies from South Korea to Indonesia.

These "reform" programmes have forced governments to cut back on social welfare, subsidies and increased dependence on private sector-controlled market mechanisms.

Ghosh points out that the cuts in state subsidies are likely to affect food security, a critical issue in populous countries like China, India and Indonesia.

The lowering of food consumption due to rising prices will have negative implications for women and girl children, usually the first to be denied a proportional share in times of shortage.

The crisis will also have serious long-term impact on the education of girls, who are being forced to drop out of school in large numbers and assist in income-supplementing activities at home, Ghosh says.

This is likely to perpetuate and even increase the traditional gap in skills and levels of education between male and female populations in the region.

In Thailand, for example, between 1980 and 1990 illiteracy rates among girls were cut by half. In the past year following the crisis, the elementary school drop-out rate has tripled and a majority of the drop-outs are girls.

If government do not specifically tackle problems faced by women, the net result could be a steady erosion in women's status. Says Ghosh: "There is apprehension that a traditionalist reaction during times of economic crisis could result in the redomestication of women."

—IPS/APB

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by Jim Davis

James Bond

BY IAN FLEMING
DRAWING BY MORAK



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I OWN 90 PERCENT OF BRONSON'S STOCK. SO I GOT EVERYTHING JUST THE WAY I WANT IT. Y'KNOW WHAT I MEAN?

OH, QUITE... YOU USUALLY DO. SHOULD THINK