

The Anatomy of Public Panic:
The how and why of Y2K hype

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Danger

Central Contention



Outline

- *Introductory remarks*
- *Technical review*
- *Prophets of doom*
- *Millennium myths*
- *Tentative explanations*
- *A reasonable stance*
- *Some general conclusions*

a very quick rush
through a large area!

very light on technical
detail ...

Bugs

not always the result
of bad practice!

- What is a bug?
 - a flaw or error, generally in software but also in firmware, occasionally in hardware
- Why do they occur?
 - because of a mistake or slip, generally caused by misunderstandings between developers
 - because of incorrect or inappropriate *assumptions* about the environment within which the system resides

The Y2K Problem (aka Millennium Bug)

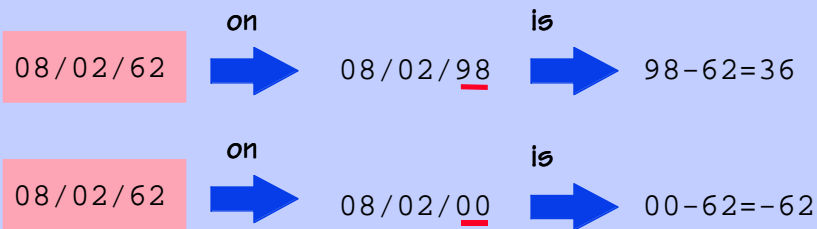
- Not one bug but a collection of date related bugs, all associated with incorrect assumptions about the *longevity* of systems and the data these systems store and also with mistakes in the handling of date related information
- The most well known bug:

08/02/62 → 08/02/1962

08/02/00 → 08/02/1900
08/02/2000

The Y2K Problem (aka Millennium Bug)

- Can have some strange consequences of which an illustration is



sell by dates
scheduled maintenance

The Y2K Problem (aka Millennium Bug)

- Another frequently encountered problem is the sort problem

1	28/07/59	1	10/01/00
2	08/02/62	2	28/07/59
3	01/09/91	3	08/02/62
...	...		01/09/91

Some Problems You Might Have Heard Of

- The “RTC-BIOS-OS” problem
- The “Overflow” problem
- The “Supply Chain” problem
- The “GPS Rollover” problem
- The “September 9th” problem
- The “Leap Year” problem
- The “International” problem

And So ...

- Why the Y2K bug?
 - *storage economy*
 - *mental economy*
 - *assumptions about how long the system would be required*
 - *dates are difficult*
- What are the potential consequences?
 - *failure*
 - *incorrect or ambiguous data*
 - *“hidden” errors*

Why Is It Difficult To Remove Bugs

- The “legacy” problem
 - relationship with supplier
 - inadequate documentation
 - technological legacy / skills shortage
- The technical problem
 - scale
 - encoding of dates
 - unknown consequences of failure
 - the “bad fix” problem

Prophets of doom

“The world depends on computers. They run power plants, route phone calls, and control banks. Because computers have existed only in the twentieth century, they store years as two digits, not four. The year 1999 is stored as 99. But on January 1, 2000, two-digit dates become 00 and computers shut down.

Los Angeles riots and burns to the ground. Neighbors fight in grocery stores over the last remnants of food. An old man dies from a stopped pacemaker. Digital power brakes lock up at seventy miles per hour. The lights are out. The phones are dead. The U.S. military sits crippled on bases and in ports around the world. Suddenly, from within the confusion, the Chinese navy steams toward Hawaii.”

Prophets of doom

“The physical and emotional stress of this disruption will challenge public health. Conventional medical care itself may be limited by shortages of food, fuel, medicines and money. As if current services were not already too expensive, we must reinforce locally-reliant emergency technologies during any crisis.”

Prophets of doom

“World industry is now so reliant on computers that a rash of failures could cause economic disruption. Some experts say this could tip the world into recession or worse. Millions of people dependent on state pensions, unemployment payments and welfare could quickly find themselves without funds if government computerised payment systems break down. Public utilities providing power and water supplies are said to be at risk if computers across the world crash at midnight on December 31, 1999.”

Prophets of doom

"Hospitals are having to postpone operations because their computer systems are already being hit by the millennium bug, the computer problem that is not due to strike until midnight on New Year's Eve, 1999.

A study to be published this week has found that, because the National Health Service has to plan operations well ahead, computers are already failing to provide doctors and NHS staff with correct information. In some cases operations planned after 2000 are being wiped from computer records."

Prophets of doom

"Last week a source at a north London hospital disclosed that an operation had to be postponed because the computer system told doctors that the swabs needed during the surgery were out of stock. In fact there were plenty available.

The confusion occurred because the swabs had a use-by date early in the next millennium. Instead of reading the date as 2001, the computer could recognise only the last two digits and believed the date to be 1901.

Prophets of doom

“Dr. Edward Yardeni, Chief Economist of Deutsche Morgan Grenfell recently stated that he is now predicting a 60% chance of a global recession similar in scope to the 1970's oil crisis as a result of Y2K.”

Some points in passing ...

- *The evidence to date*
- *Signal to background*
- *“You can prove the existence of a bug, you can't prove its absence”*
- **BILLIONS!**
- *Cost models*

Millennium Myths

- *At the stroke of Midnight ...*
- *Embedded systems are out to get you ...*
- *If <fill in blank> are spending <ludicrous amount> then ...*
- *But they are only <some modest percentage> of the way ...*
- *It's not us it's the data we get from ...*
- *Compliant, oh my God we must be compliant ...*
- *The consequences of failure ...*
- *Would you travel by plane over the Millennium?*
- *Its not us that I worry about, its <fill in name of less developed country> ...*

Who and Why?

- *The "Public"*
 - *Ignorance and pervasiveness*
- *Business Managers*
 - *Information systems creep*
- *IT Managers*
 - *The disaster loophole*
 - *Empire building*

Who and Why?

- *IT Consultants*
 - *The lure of filthy lucre*
- *Academics*
 - *Scientific sloppiness*
- *Y2K Experts*
 - *Low risk prophecy*
 - *Panic is good for you*
 - *The pressed nose problem*

Who and Why?

- *Science Policy Experts*
 - *The “mad cow” effect*
- *Journalists*
 - *Things which are “good to think”*
- *Nutcases*
 - *The “End of the World”*
 - *The survival mentality*
- *Government*
 - *All of the above*

A Reasonable Stance

Looking at the problem behind the problem - chronic problems are not sexy

Maintaining a sensible and empirically founded approach to risk

Avoiding both “chicken little” and undue complacency

What I worry about

- “Drift systems”
- Bad fixes
- The “well that’s all over then” attitude
- New Age irrationality & Millennial lunacy
- Drip-drip of less serious issues (hacker-phobia, kiddie-porn terror) drowning out more serious issues (privacy, access, quality)
- Drunkenness



Some General Conclusions

- *Increasing frequency of scientific panics and our inability to deal with them*
- *Educating about risk*
- *Shared responsibility*
- *The “virus-hoax society”*