Disasters I Have Known

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A Simple Disaster Example

- We invited new friends from work over for dinner
- We were into experimental gourmet cooking
- We decided on bouillabaisse, a French fish stew
- We went all out:
  - Prawns, lobster, clams, various types of fish
  - Saffron! Fennel! Wonderful spices!
  - It was great!

Vegetarian?! But It's Kobe Beef!

- You can guess what happened
  - The food came out great! We served it and started in.
  - After one spoonful, there was this awful silence.
  - Oops.
- As it turned out…..
  - They were fresh from the Midwest, land of mild food
  - They did not know how to deal with an exotic fish dish
- I forget what we did, but it all worked out.

Lessons Available for Learning

- Be careful with surprises
  - Check that what you want to give, they want to receive
  - Especially when it seems obvious!
- We could have asked.
  - But that would have spoiled the surprise!
  - It will be so Wonderful, we just know they will like it!
  - And we'll make it even more Wonderful, just in case.

My First Disaster

- The family business was egg grading machines
  - My dad and his brothers ran it, very successfully
- They were made of sheet metal on an iron frame
- I had this idea for the ultimate egg machine
  - It would be all sheet metal, modular, precision!
- I designed it, with T-square and drafting templates
- They built it.

On the Day of the Test Run

- The new machine was beautiful
  - Brave with new paint, precisely assembled, ready to go
  - It was a big machine, full configuration, the ultimate!
- We turned on the drive motor
  - The motor drove the machine through a roller chain
  - The drive chain promptly bent over the first idler shaft!
  - And then, nothing moved……

But It Sure Was Pretty

- It was quietly retired, with few words said
  - It wasn't fixed because the whole thing wasn't needed
- It was a solution looking for a problem.
  - The all sheet metal approach eliminated the iron frame
    - But the iron frame worked fine and was cheap enough
  - It was modular to handle any configuration
    - But there were only three configurations used
    - And multiple modules cost morethan standard configurations

My Second Disaster

- In 1980, I had a hardware design company
- We got a contract to design a computer system
  - It was the basis for an instrumentation product line
  - It was to use a NOVA minicomputer emulation
  - It needed a basic CPU + various I/O: disk, video, etc.
- We decided to build a full system on one board
  - Everything on one board: CPU, memory, all I/O etc.
  - And we talked the customer into it

My Second Disaster - Continued

- The board schematic was 3’ wide by 10’ long
  - Cad tools were a drafting table and a logic template
- The board was 12” x 18” and crammed full
  - Its design cost $12K = 4 Volkswagens at that time
  - PC cad tools were an Exacto knife and layout tape
- We made the board and started to assemble it
  - I still have one!

My Second Disaster – Continued

"Adde parvum parvo magnus acervus erit."

[Add little to little and there will be a big pile] ***Ovid***

And the Winner Is….

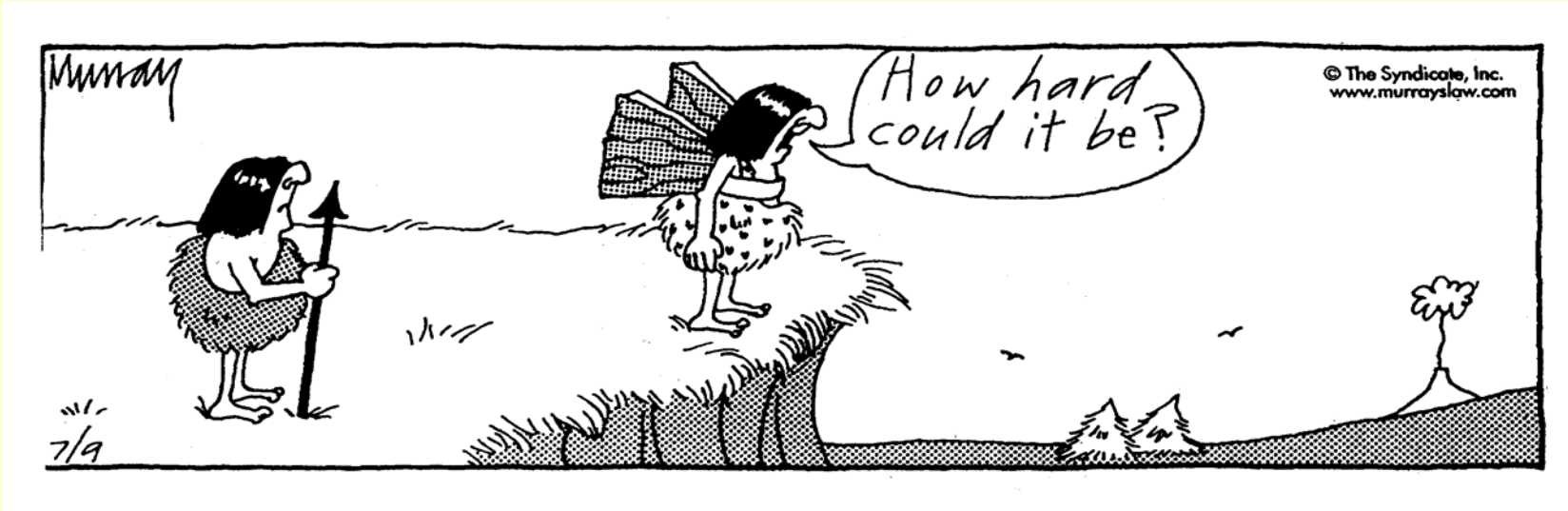
- The project was killed for other reasons
  - We were “saved by the bell.”
  - We built it, but may never have finished debugging it
- I fell into adding little to little => a big pile
  - One big board wasn’t cheaper than several small ones
  - You can do each feature but maybe not all together
  - The big surprise happens when you try to bring it up!

Would That I Had Remembered

Watching a Disaster Unfold

- Company X has a successful basic uP product
- Product Planning to define the "next generation"
  - The "432" [Not Intel's 432….]
- The next generation will be much better!
- We can put in every feature we want!
  - If a few features are good, a lot is better
  - Besides, silicon is so cheap

Watching a Disaster Unfold – Continued



Watching a Disaster Unfold – Continued

- Massive project uses most engineering resources
  - Each feature requires engineering
- Schedule slip becomes a landslide
  - And sucks in more engineering to save it
- Result: Chip is Big, Hot and Slow
  - As in, much too big, too hot & too slow!
  - Competitors products are much simpler, smaller, faster
- End result: It's dead, Jim.

Lessons Available for Learning

- Feature gallop happens incrementally
  - Each feature seems good, logical, important, easy
  - The result seems so satisfying, so magnificent!
- You exceed the complexity limit w/o knowing it
  - Each feature adds just a little size, schedule slip, etc.
  - You won't know as you are doing it when it's too big
  - You will learn too late - at bring up or full chip layout

After the Battle, Mother

- Disasters happen because we want to do well
  - We want to do our very best, "be the best we can be"
- You have to have some confidence, some ego
  - Otherwise, you won't try the new and invent
- You have to believe you know the customer
  - Even in the face of contrary data **[Drucker]**
  - Otherwise, you will never get anything done
- Good judgment comes from experience
  - Experience comes from bad judgment

Coda – A Relavent Image

- "Bit between one's teeth"
  - When the horse clamps the bit between its teeth, stops listening to the rider, and does what it wants

End