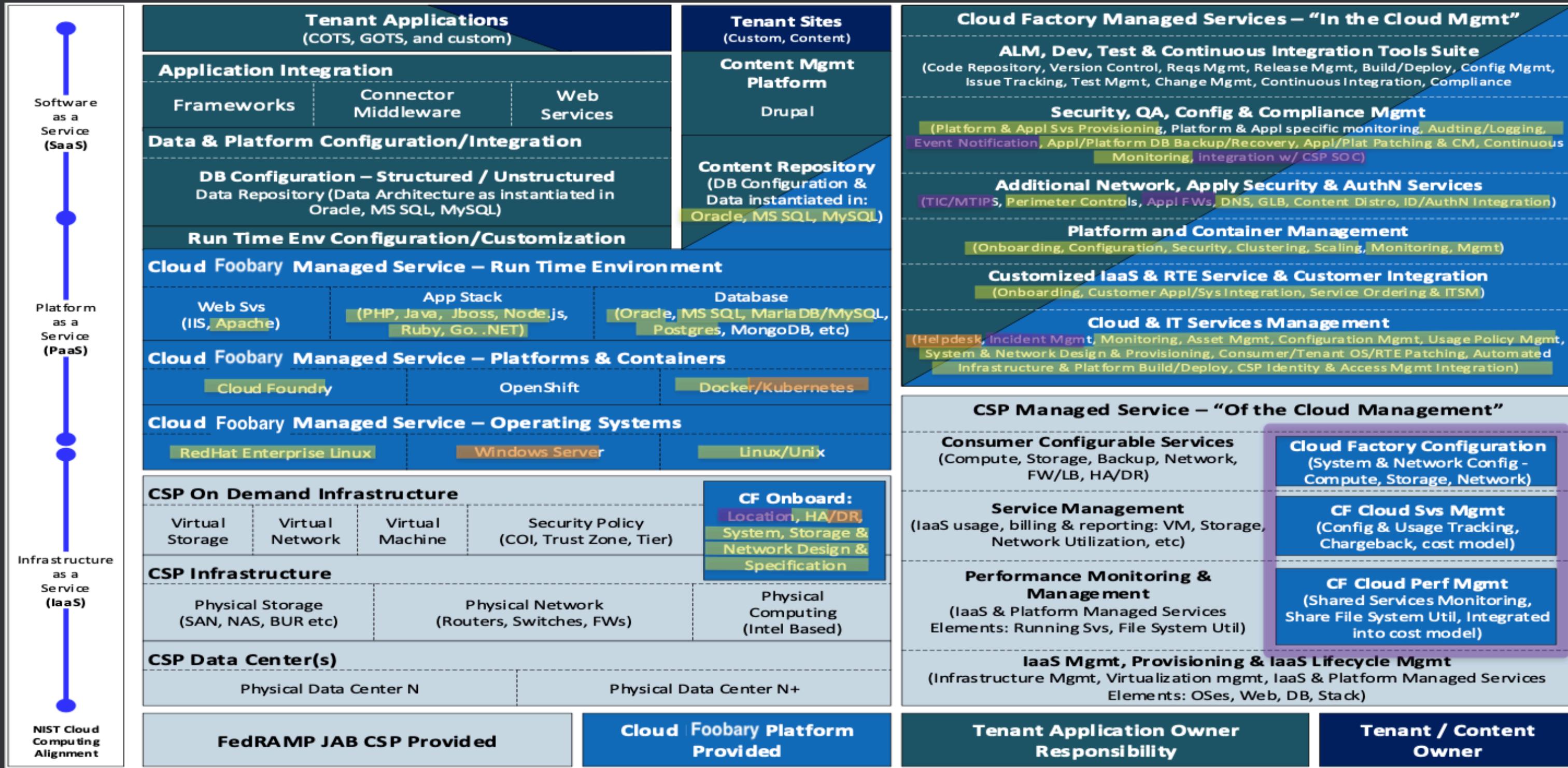


Mnemonic Rules for Eponymous Laws

- SRECon EMEA 2024 , 2024-10-29
- Peter Burkholder

Brace yourself....



What I said:

- How are you focussing on user experience without any users?
- Agile Development... Blah, blah, blah, Lean Enterprise, MVP

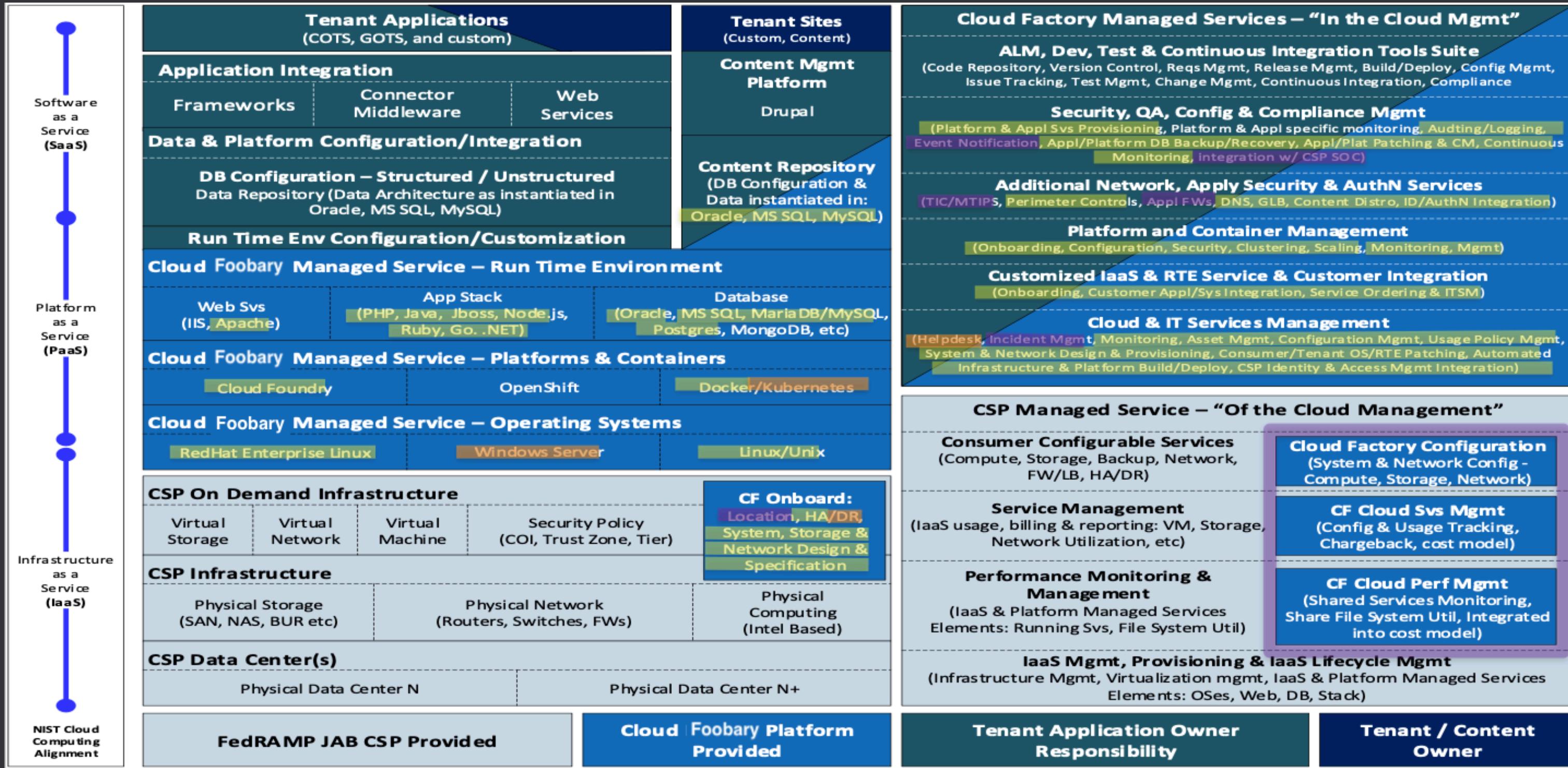
What I needed:

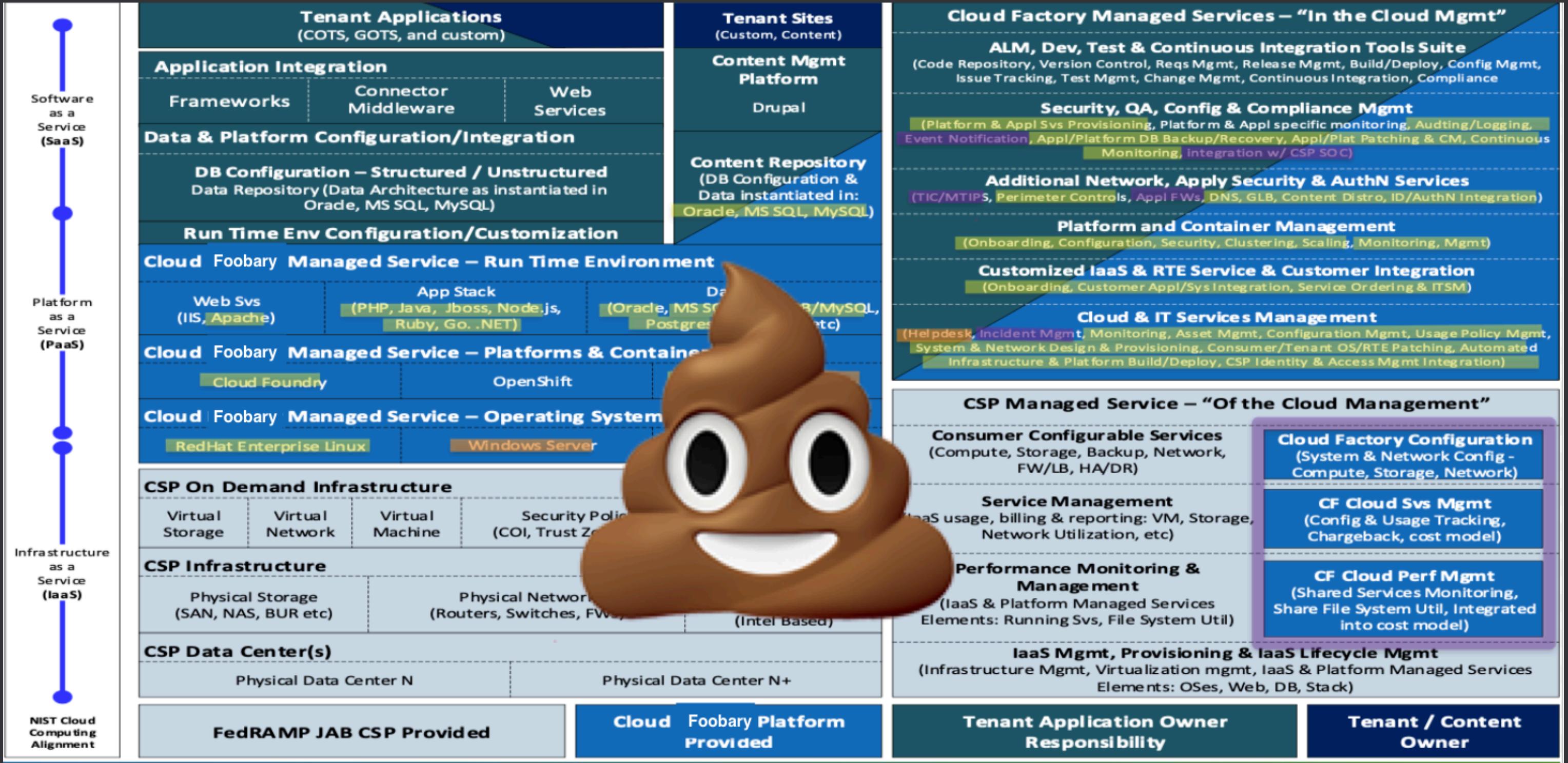
- Eponymous Principle: a law named for a person (from Greek eponymos "given as a name")
- Mnemonic Rule: a trick for recall (from Greek mnēmē "memory")

Mnemonic Tricks

To build a memory ... it has to be a little bit weird

— Per Sederberg (Psychologist, University of Virginia)





Evolution of Digestion and 💩

- Worm Digestion:
 - A simple system that works
 - Eats continually, digestive system produces bile continuously
- Human digestion:
 - A complex systems that works
 - We eat big meals, liver stores bile in the **GALL**bladder
- **Gall**: Mnemonic for ...



Gall's Law

- "A complex system designed from scratch never works, and cannot be patched ... to make it work. You have to start ... with a working simple system."
 - *John Gall, M.D. 1975, General Systemantics*
- Every complex system that works has evolved from a simple system that works.
- Mnemonic: Graphic imagery, digestive system, and **GALL** bladders

Mnemonic Tricks for Eponymous Principles

- Peter Burkholder (*he/him*)
- US Gov (Cloud.gov), Chef Software, NIH, NCAR, PacNW Seismic Lab
- @pburkholder most places (bsky, LI, infosec.exchange)
- Geophysicist / Seismologist / Physics Teacher
- So: THERE WILL BE A QUIZ

The power of Eponymous Principles

- Newton's Laws
 - Law of inertia, etc.
- Murphy's Law
 - Everything that can go wrong will
- Moore's Law
 - Compute power doubles every two years (so far)

What makes for a good eponymous principle?

- True - with empirical evidence, or
- True - with weight of lived experience
- Predictive or explanatory value

Speaking of predictive value...

Any idea how one might found out the fate of Cloud [REDACTED]? (edited)



10:36

[REDACTED] heya! checking the internal FISMA dashboard, it did not move forward and the overall effort is marked "retired".



Peter Burkholder (OOO 10/24-11/3) 11:13

Excellent! Confirms Gall's Law

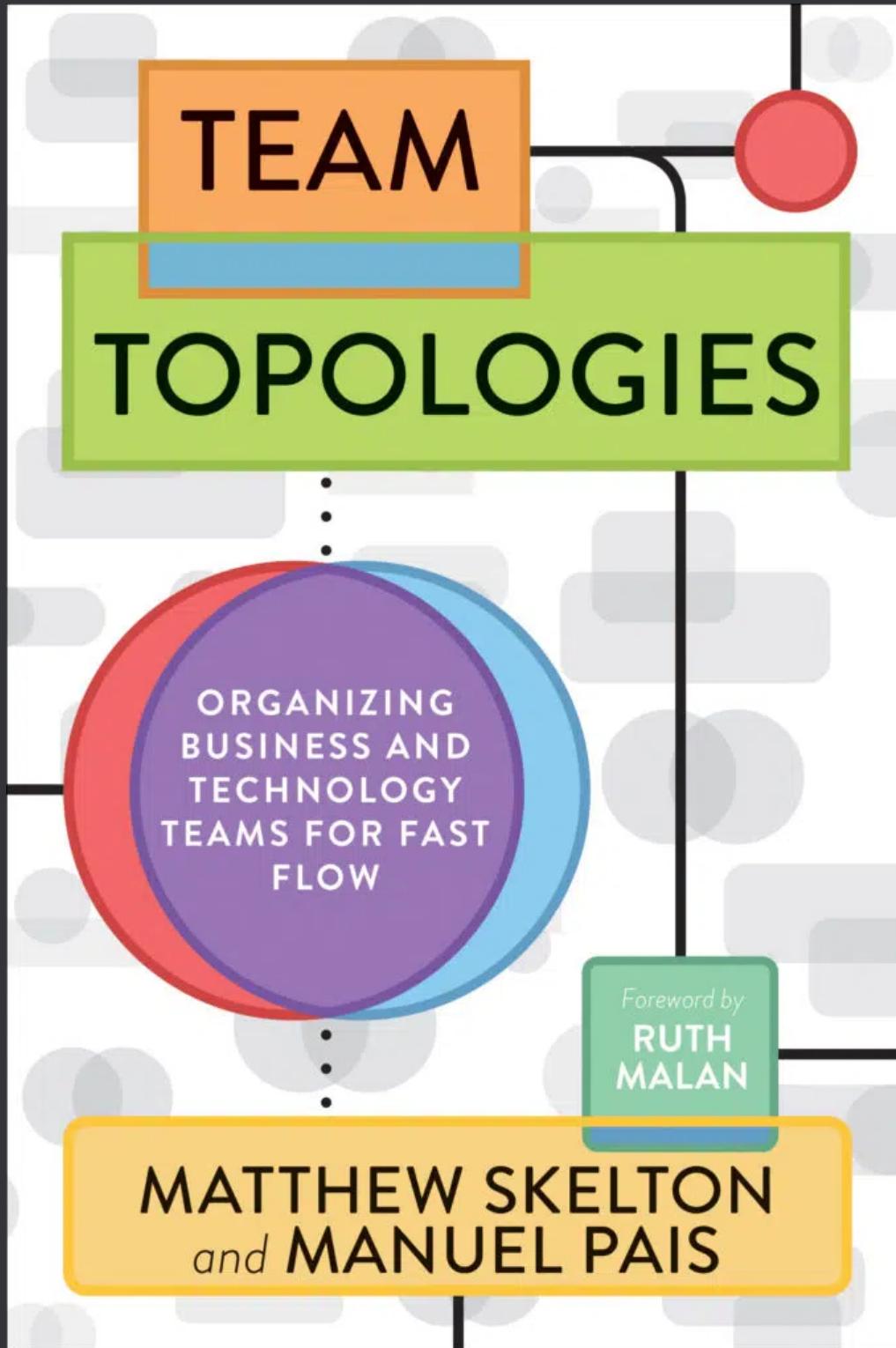
Conway's Law

"Organizations which design systems...are constrained to produce designs which are copies of the communication structures of these organizations"

- *Melvin Conway, 1968*
- Or: Your architecture will mirror your org chart
- *Mnemonic: We CONstruct systems mirroring the WAY we communicate*
- Application: ...

The Inverse Conway Maneuver

- Build teams to achieve the desired architecture
- Tech: Used bounded contexts and APIs along team bounds
- Orgs: Consider *Team Topologies* (Skelton & Pais, 2019)

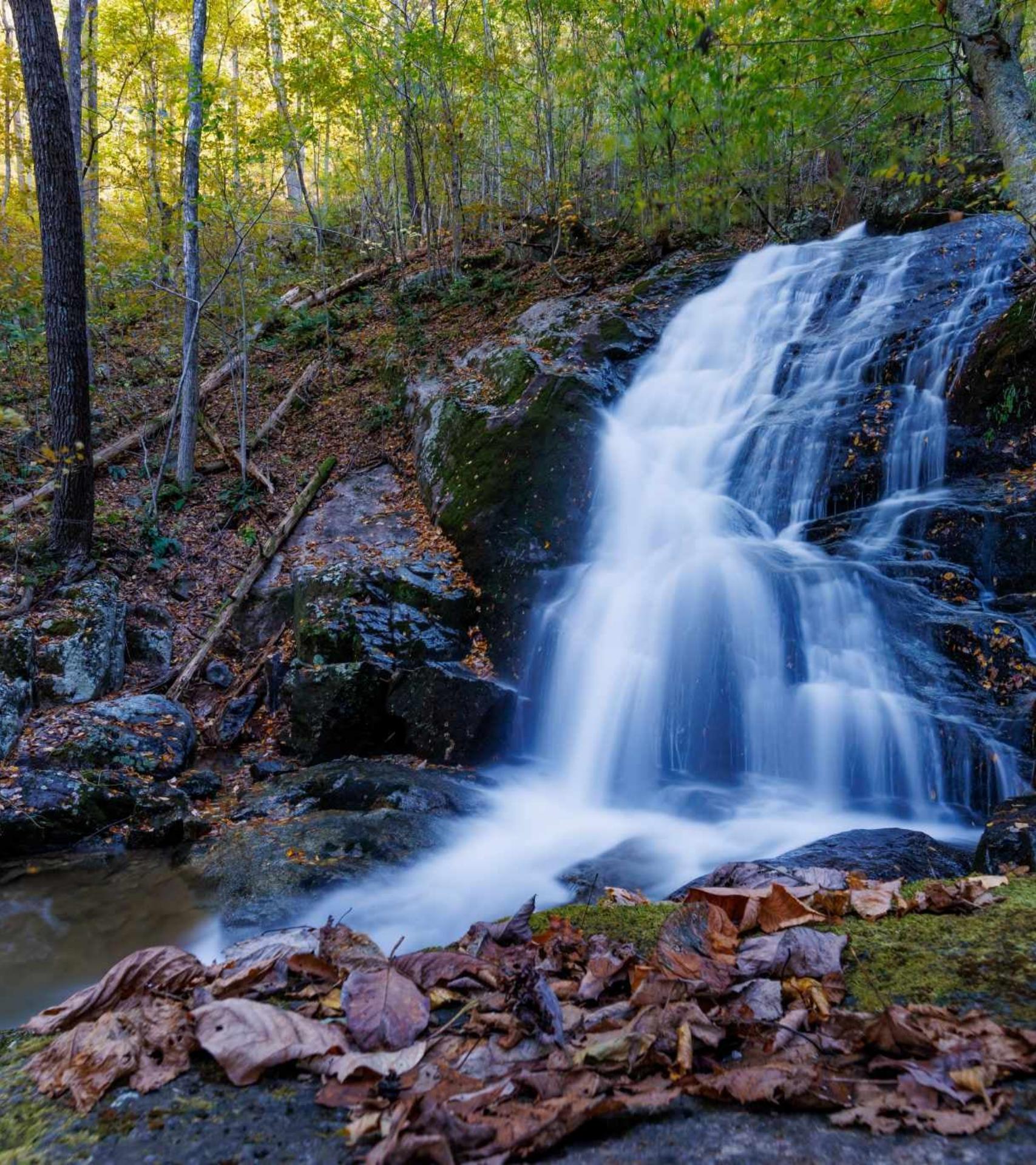


Brooks Law

"Adding [engineers] to a late software project makes it later"

- *Fred Brooks, 1975, The Mythical Man Month*
- Mnemonic: The **BROOK** went over the waterfall¹
- Why: onboarding time + geometrical growth in communication lines

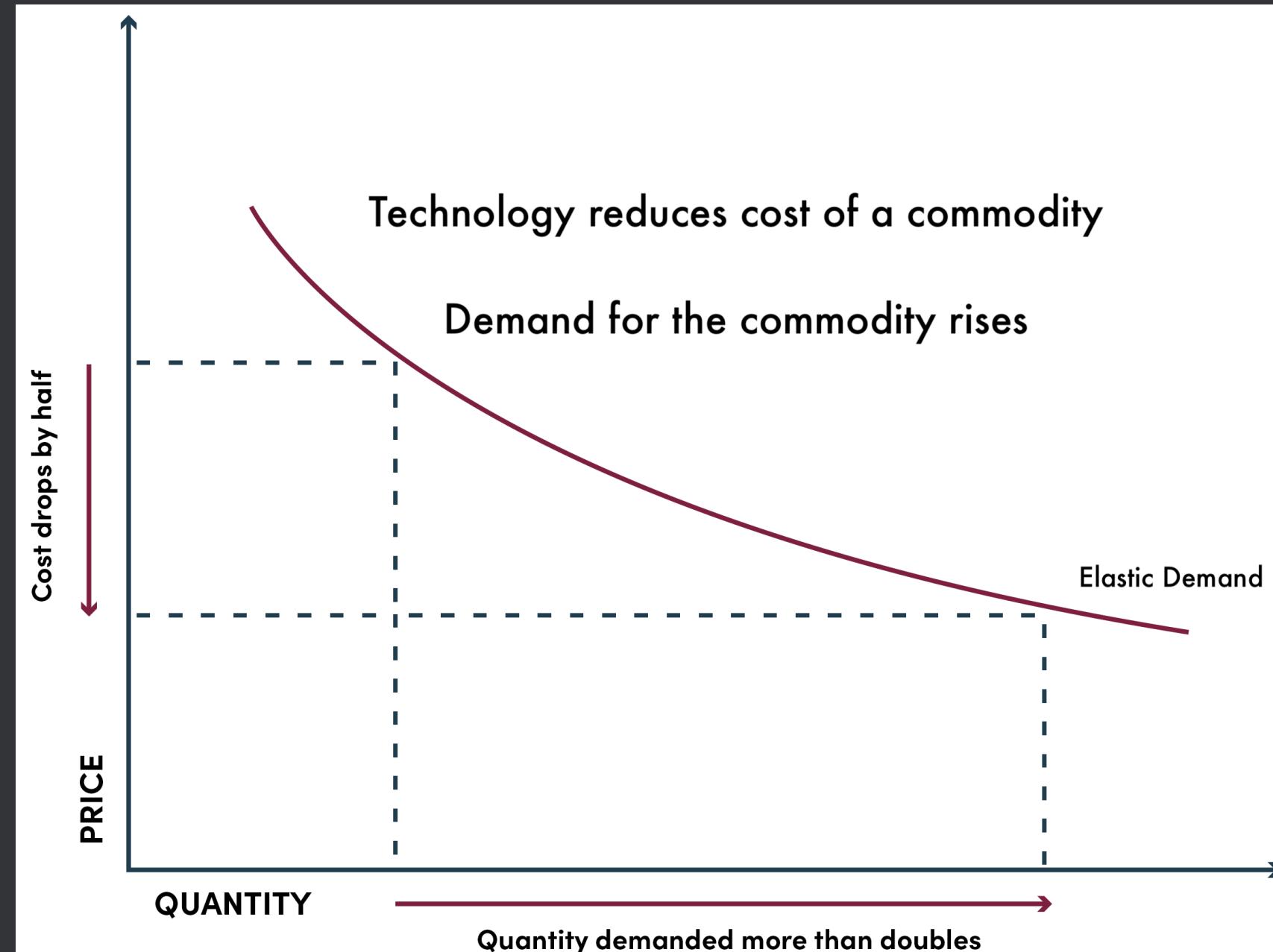
¹James C. **Brooks**, @shootjamesshoot / instagram



Jevons' Paradox

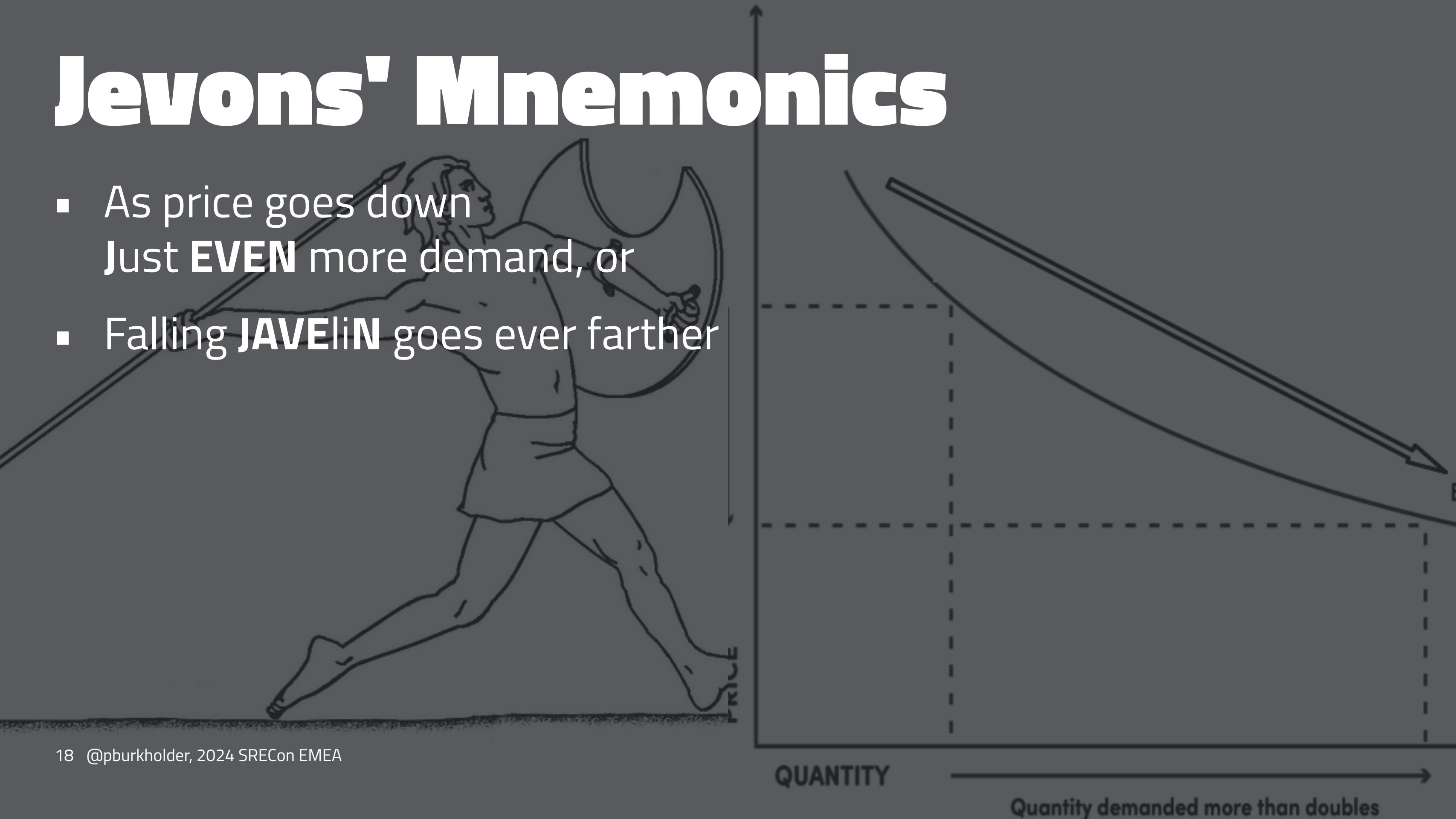
As the cost of an economically useful commodity decreases, total expenditure on the commodity grows
— *William Stanley Jevons, 1865*

- Examples:
 - 1860s: Coal
 - 1970s: Automobile fuel efficiency
 - 2010s: Cloud spend
- See also: Moore's Law



Jevons' Mnemonics

- As price goes down
Just **EVEN** more demand, or
- Falling **JAVELiN** goes ever farther



Pareto Principle

The 80/20 rule: 80% of a project is complete in 20% of the time

- *Joseph Juran, inspired by Vilfredo Pareto, 1941*
- Mnemonic:
PARE down **TO** 80% of work with 20% effort
- Statistically: Power-law probability distribution
 - *Pareto Distribution*

Pareto Distributions

$\alpha = \infty$

Many small instances, but a few significant instances may account for most of the impact

■ Earthquake magnitudes

— $\alpha = 2$

■ Rainfall events

— $\alpha = 1$

■ Size of files transferred on a network

■ Size of human settlements

■ Generally: Confounding Factors

Pareto Principle

"In the last six months, we've been able to meet the needs of one-half of our users. We can meet the needs of the other half in another six months"

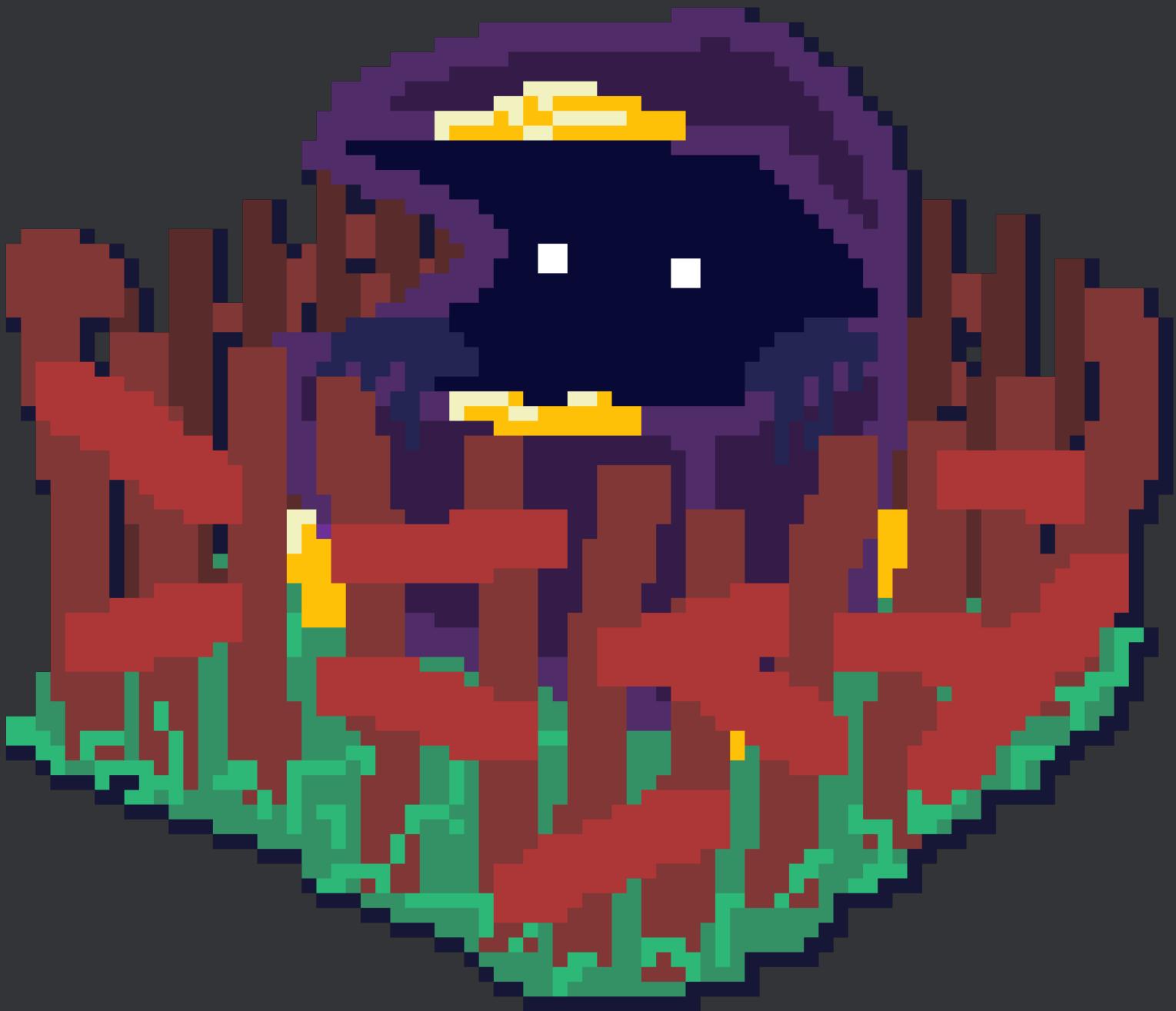
- Can you spot the problem here?

If you don't see the use of [a fence]... Go away and think.

Then, when you can ... tell me the use of it, I may allow you to destroy it.

— G. K. Chesterton, 1929

Chesterton's Fence



Do not remove a fence until you know why it was put up in the first place.

- Mnemonic: That **CHEST** behind the **FENCE** - it may be a danger!
- Application:
 - Code Comments, ADRs (Architectural Decision Records), Pull/Merge Requests
 - Employee Retention

Meme Laws

- True – with empirical evidence
- True – with weight of lived experience
- Feel true
- Predictive or explanatory value
- Build Community

Meme Laws

Hanlon's Razor

"Never attribute to malice what is better explained by incompetence"

-- Unknown

* Mnemonic: Never attribute to *conspiracy* what is better explained by incompetence

-- Apocryphally Robert A. Heinlein



THE PUPPET MASTERS
by Robert A. Heinlein

Cunningham's Law

"The best way to get the right answer on the internet
is not to ask a question; it's to post the wrong answer."

-- *Ward Cunningham*

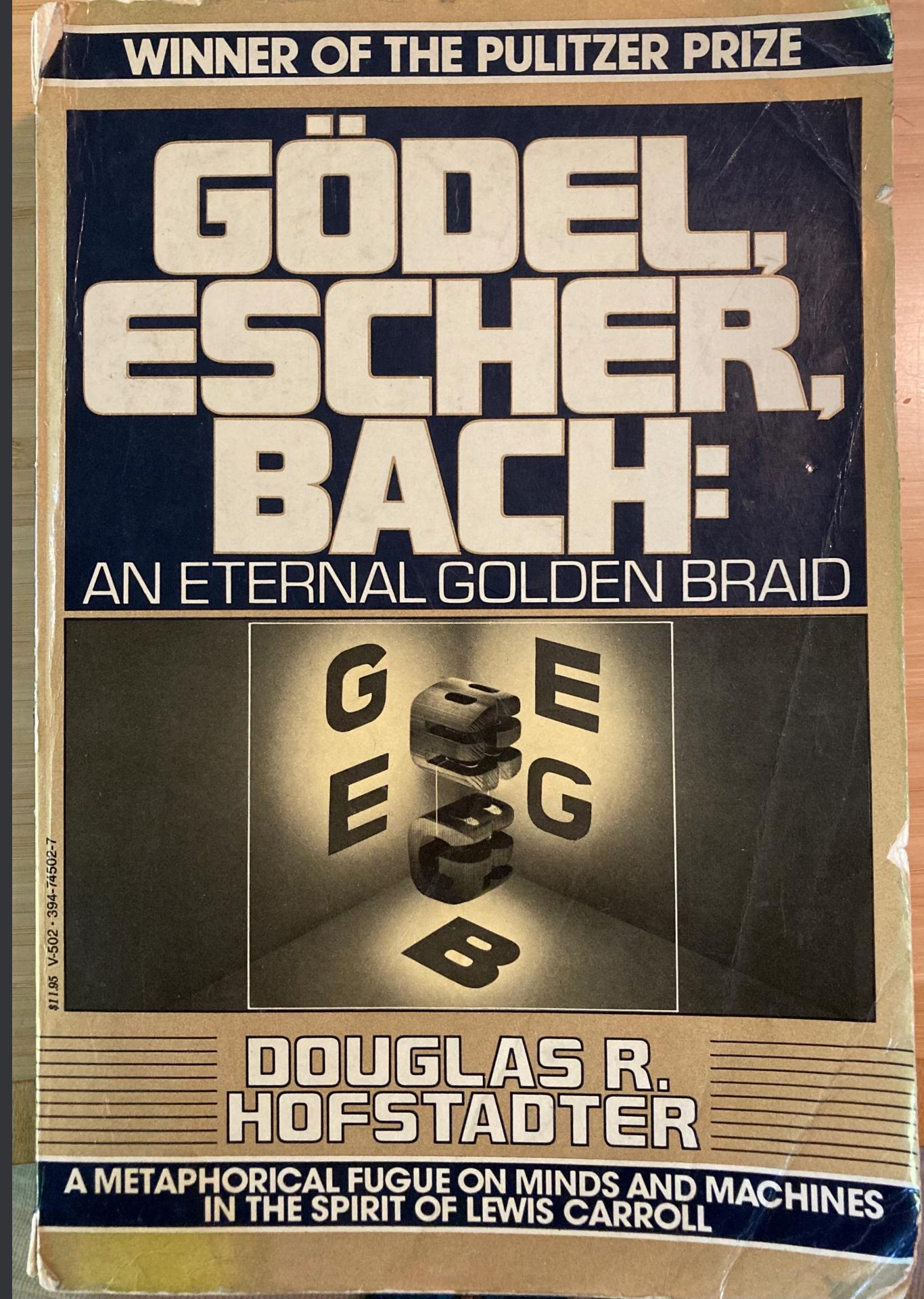
* Mnemonic: Knowledge is COMING HOME when you
post the wrong answer

Hofstadter's Law

"It always takes longer than you expect, even when
you take into account Hofstadter's Law."

-- *Douglas Hofstadter*, 1979

* Mnemonic: Ha! Later...



Whong's Law

"Every government agency, everywhere is working on a “new system”; It will solve all of their data problems and will be ready to use in 18-24 months."

-- *Chris Whong, 2018*

- Mnemonic: Data throng done long? Wrong, says Whong.
- See also: Gall's Law, Pareto Principle

Quiz Time

- Galls' Law
- Conway's Law
- Brooks' Law
- Jevon's Paradox
- Pareto Principle
- Chesterton's Fence
- Hanlon's Law
- Cunningham's Law
- Hofstatder's Law
- Whong's Law

What law explains this?

To meet the specified contract deadlines,
we've added a DevOps team. But now we're further behind schedule!

Answer:

- Brooks's Law
- Whong's Law
- Conway's Law
-

What law explains this?

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Answer:

- Brooks's Law
- Whong's Law
- Conway's Law
- Mnemonic: The BROOK goes over the waterfall

Fill in the blank

We have five teams assigned to a system that only has three major components. Time to apply an Inverse _____ Maneuver so we don't end up with five subsystems.

Answer: CONWAY

We have five teams assigned to a system that only has three major components. Time to apply an Inverse **Conway** Maneuver so we don't end up with five subsystems.

- We **CON**struct systems the same **WAY** we're organized

Fill in the blank

This proposed architecture is too complex. We'll have to start with a simpler initial *working* solution, otherwise we're doomed by _____ Law.

Answer: Gall's Law

This proposed architecture is too complex. We'll have to start with a simpler initial *working* solution, otherwise we're doomed by **Gall's Law**.

- 💩 architecture -> digestive evolution -> **GALL** bladder

How do you respond?

Argument: We're vastly improving the energy efficiency of Large Language Models, so don't worry about the environmental impact.

Response: Sorry, but are you familiar with _____ ??

Answer: Jevon's Paradox

Argument: We're vastly improving the energy efficiency of Large Language Models, so don't worry about their environmental impact.

Response: Sorry, but are you familiar with **Jevons' Paradox??**

Mnemonic: Just **EVEN** more demand as efficiency improves.



Heather Battaglia (18F) (DEN) Nov

27th at 6:26 PM

why is it that no matter how realistic I try to be with my time estimates, everything is always at least double the time I think it is

3 replies



James Tranovich (18F - SF - he/him)

13 days ago





Heather Battaglia (18F) (DEN)  Nov

27th at 6:26 PM

why is it that no matter how realistic I try to be with my time estimates, everything is always at least double the time I think it is

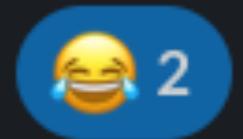
3 replies



James Tranovich (18F - SF - he/him)

13 days ago

Hofstadter's law!



Thank you

And laws to look forward to in a future version

- Goodhart's Law
- Overton Window
- G.I. Joe Fallacy
- Dunning Kruger
- Metcalf's Law
- Parkinson's Law
- Dunbar's Number

And thank you to Usenix & the SRECon organizers

Resources

- This talk: <https://github.com/pburkholder/eponymous-principles>
- Laws of Software: <https://laws-of-software.com>

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- Fence: (C) 2024 Allie Burkholder, used with permission
- Brook: (C) 2024 James C Brooks, used with permission
- Jevon's Law: Redrawn from <https://www.monitordaily.com/article-posts/jevons-paradox-meets-moores-law-why-ai-will-drive-more-hiring-in-equipment-finance/>
 - with Futura
- Javeleer: <https://upload.wikimedia.org/wikipedia/commons/thumb/f/fb/Javeleer.png/640px-Javeleer.png>
-

Intro:

Peter is an engineer for the U.S. Government's Cloud.gov. His prior stints include Chef Software, the U.S. National Institutes of Health, and the Pacific Northwest Seismic Labs.

The two skills he still uses from graduate study in seismology is knot tying and the Unix command line. Thanks to Usenix LISA he made a career of the latter.

This talk is free of AI-generated imagery.

Question: I saw the G.I. Joe Fallacy on the closing slide - what is that??