

Mnemonic Rules for Eponymous Laws

- SRECon EMEA 2024
- Peter Burkholder

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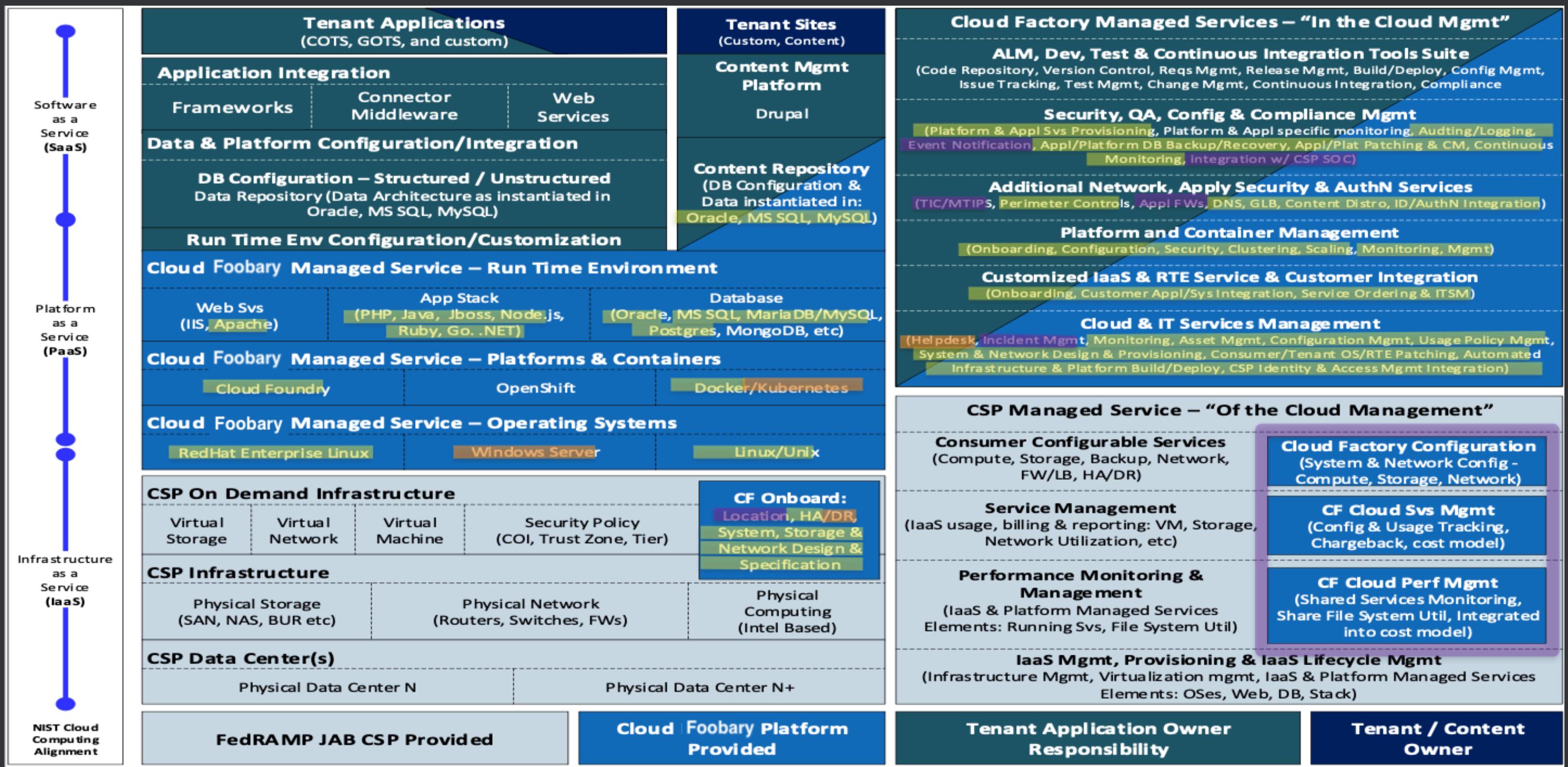
Good afternoon and thanks for
being here. Let's dive in...

Brace yourself....

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System diagram

- ^ In 2019 Cloud Foobar
- ^ CTO and Platform Team
- ^ System diagram and devops vomit



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Note Components

2 hour env provisioni

DevEx focussed, Delivery enabling

security and compliance and

governance

I wasn't in a position to critique

What I said:

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

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")

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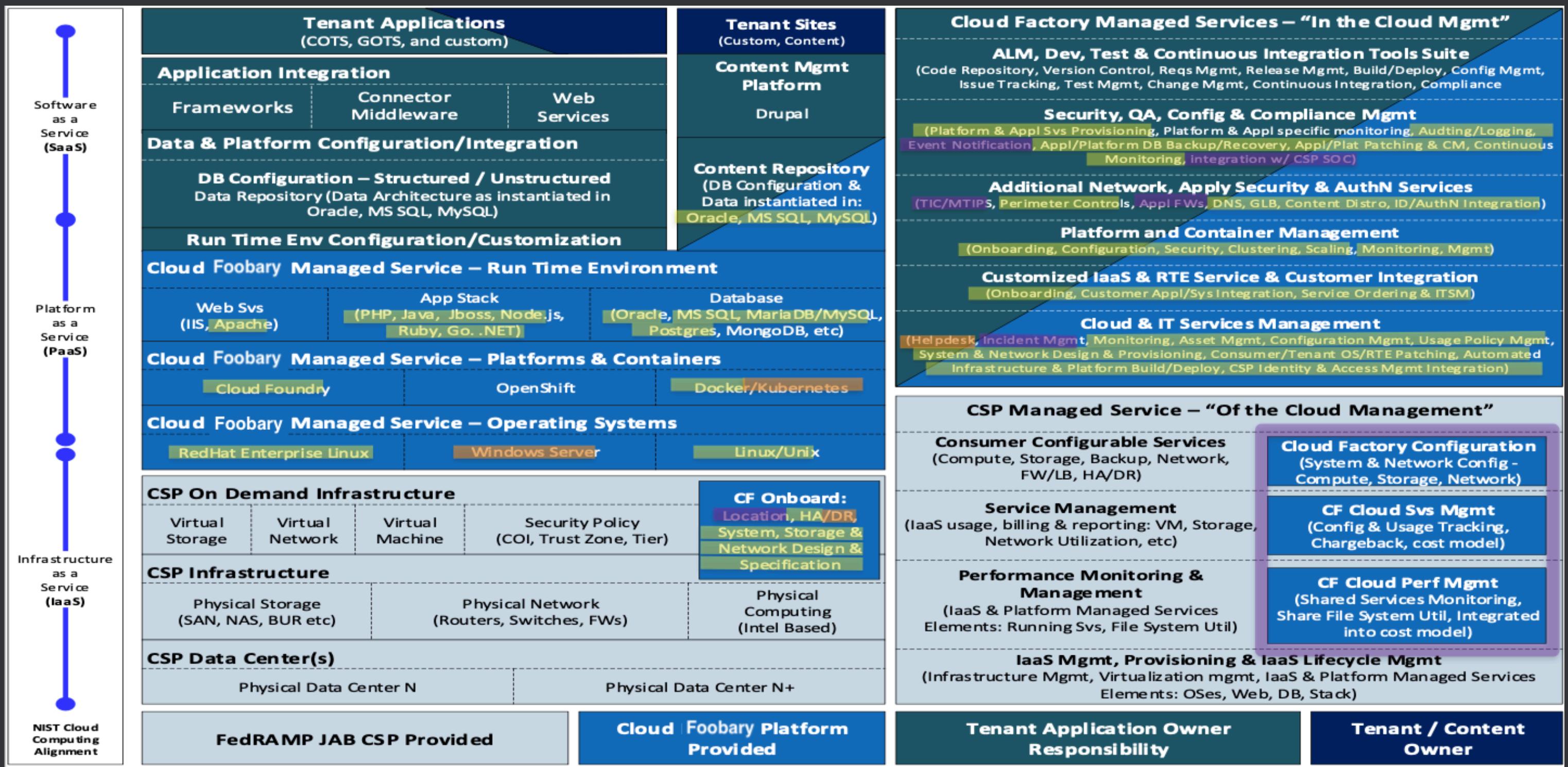
So about mnemonic tricks, I like this quote:

Mnemonic Tricks

To build a memory ... it has to be a little bit weird
— Per Sederberg (University of Virginia)

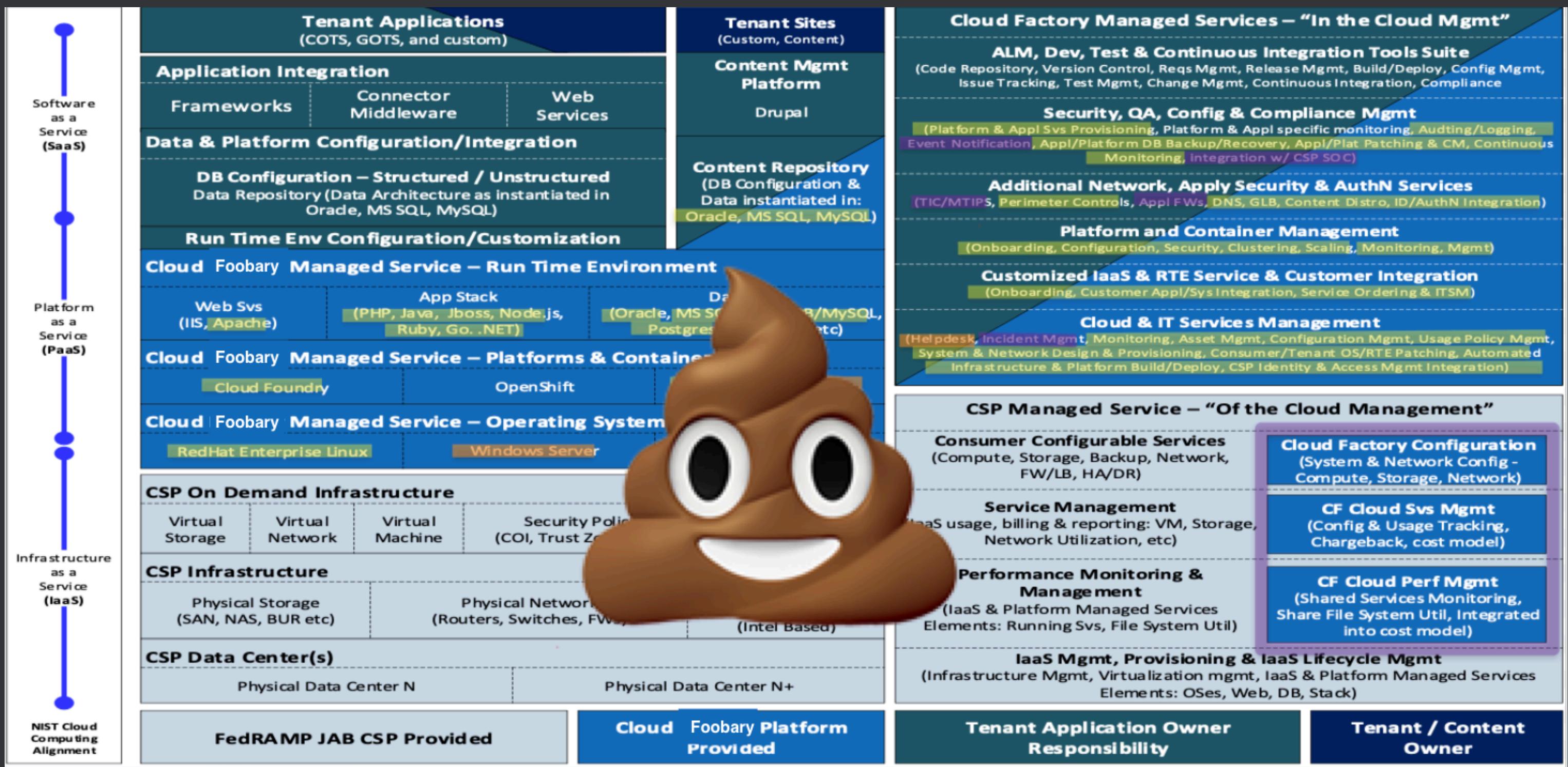
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weird, gross, or embarrassing.
Make them stick.
Make them work
My thought process now



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I see a hopelessly complex system diagram, and atop that, I visualize a poo emoji.



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poop. and not just
metaphorical poo but I ponder
literal
crap and the eons long
evolution of poop, that is:

Evolution of Digestion and 💩

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

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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

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And that's IS how I would respond today w/ complex proposals (OSCAL anyone?)

How this works... And welcome!

Mnemonic Tricks for Eponymous Principles

- Peter Burkholder (*he/him*)
- US Gov (Cloud.gov), Chef Software, Audax Health, AARP, NIH, Research Labs
- Geophysicist / Seismologist / Physics Teacher
- So: THERE WILL BE A **QUIZ**

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I'm glad to be here today to share with you the eponymous principles I have found useful in my work, and the mnemonic tricks I use to call them up, some context on how to apply them.

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

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There is weight that is not merely rhetorical "argument from authority" but should have the backing of experience and empirical evidence.

What makes for a good eponymous principle?

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

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So, in addition to having "truth value it should also have predictive or explanatory value Consider Gall's Law in this light: It is true from lived experience and has PREDICTIVE VALUE.

Speaking of predictive value....

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

[REDACTED] 10:36
[REDACTED] hey! 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

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2 Weeks provisioning! Over budget

^ Collapsed

^ on to our tour of other laws:

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 **CO**nstruct systems mirroring the **WAY** we communicate
()
- Application: ...

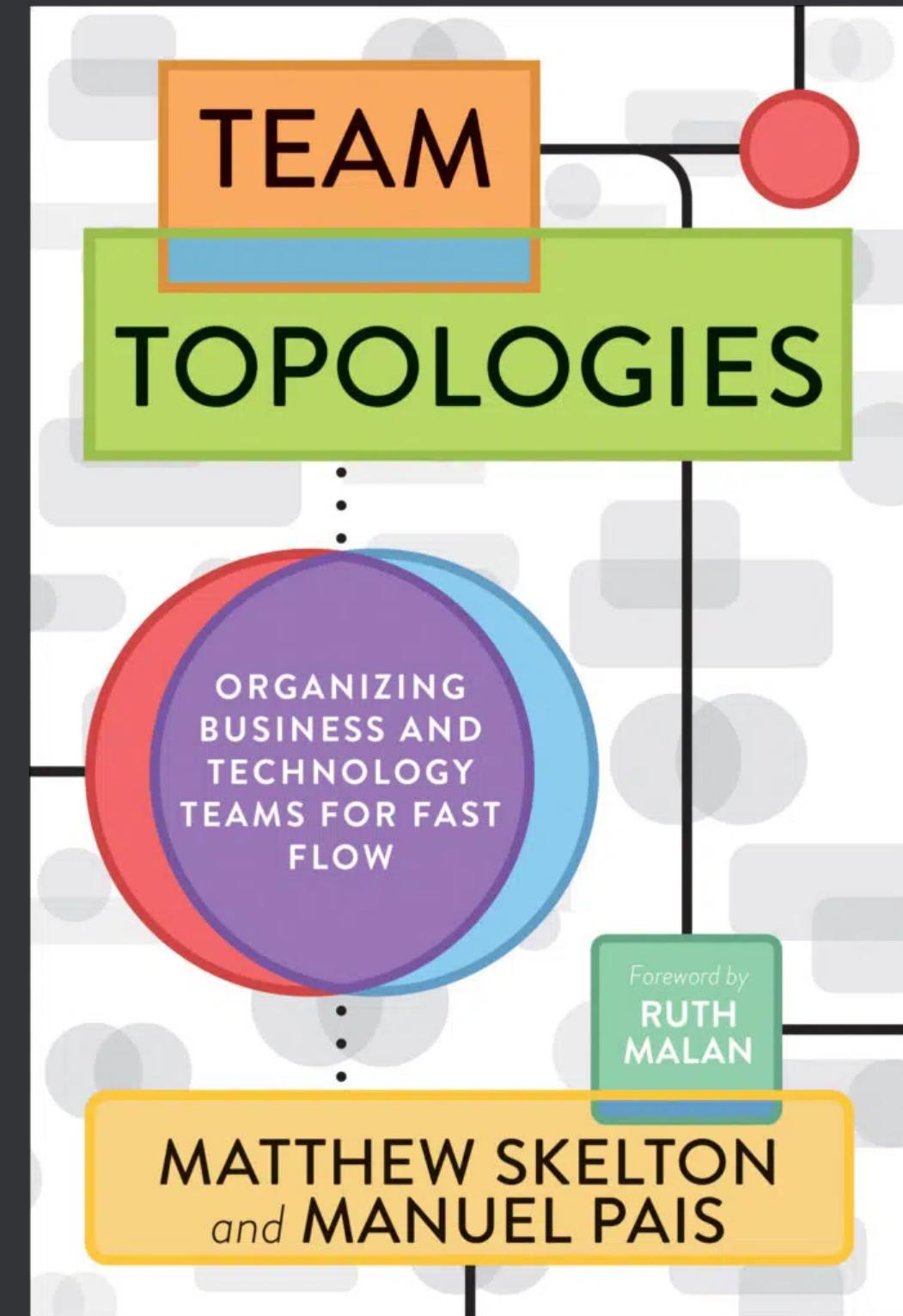
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Pathological organization
cultures and structures
will result in pathological
technical systems.

True by Experience, Predictive
Value

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)



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Thoughtworks blog post 2015.
Matthew Skelton & Manuel
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

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Water fall - Not dams and
Skyscrapers

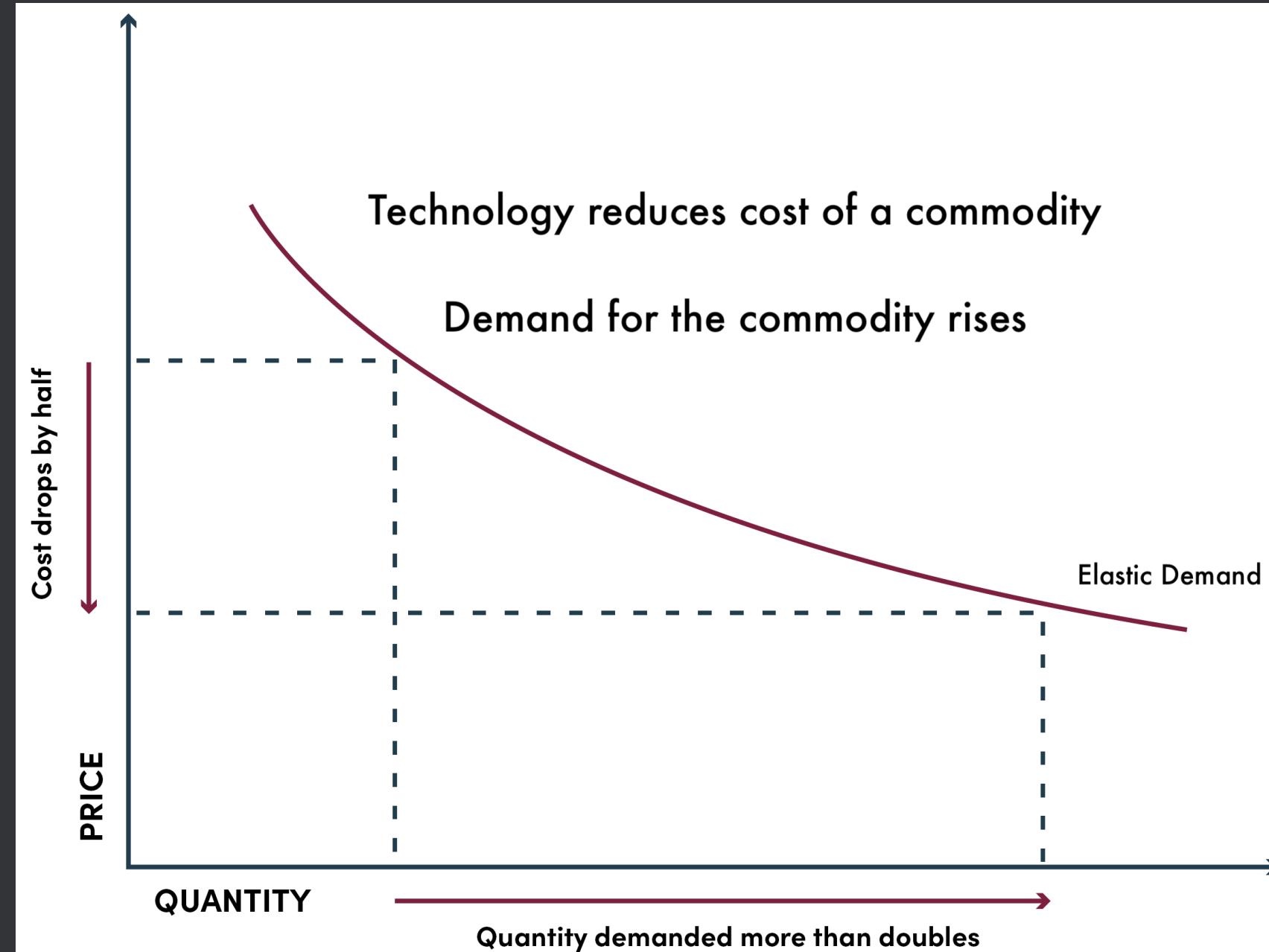
^ Agile too

^ SW is team members to
communicate

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

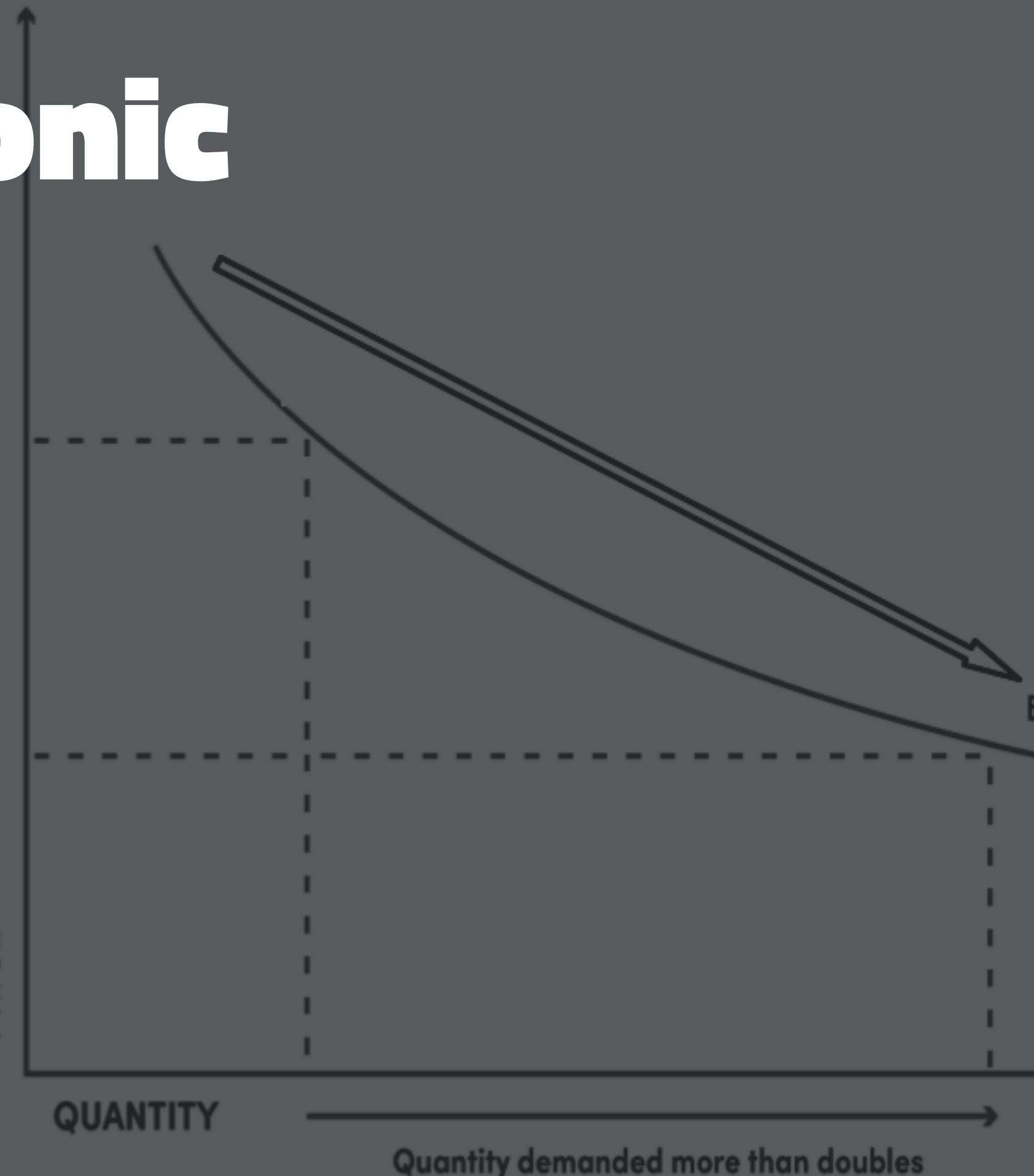
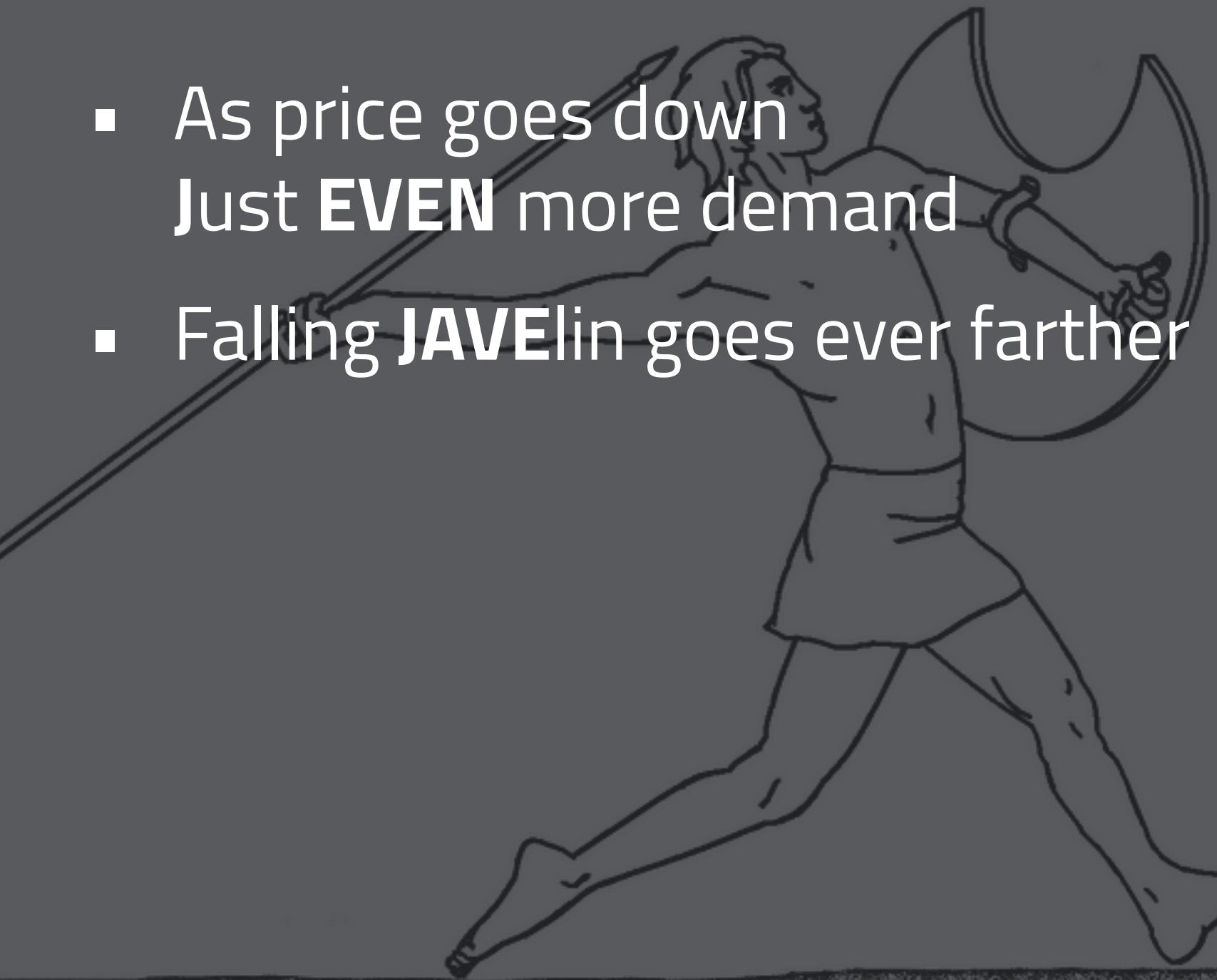


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James Watt steam engine economists forecasting an end to the pollution as the efficiency of Watt's new engine reduced coal per task
If anyone you're talking to thinks cloud spend is going to go down, brandish this. Cloud spend provides returns on your spend that simply encourage more spend. Same with Coal, and fuel efficiency.

Jevons' Mnemonic

- As price goes down
Just **EVEN** more demand
- Falling **JAVElin** goes ever farther



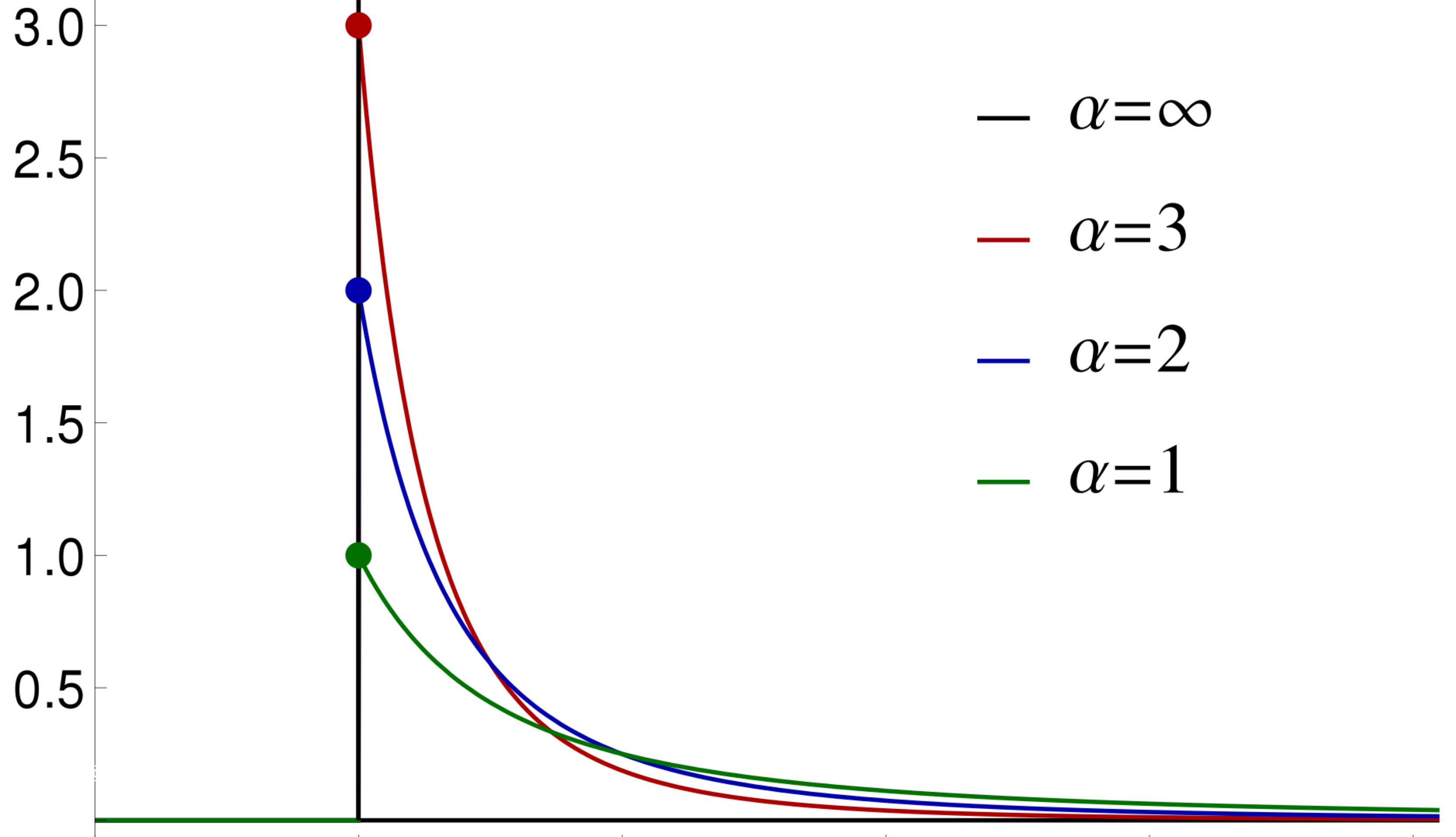
Pareto Principle

"the vital few and the useful many" (or the 80/20) rule

- *Joseph Juran, inspired by Vilfredo Pareto, 1941*
- 80% of a project is complete in 20% of the time
- Mnemonic:
PARE down **TO** 80% of work with 20% effort
- Validity: Power-law distribution in process variation
 - or a *Pareto Distribution*

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Uses: Focus on the 20% most critical findings,
to take care of 80% of your risk



Inverse of an exponential curve

Pareto Distributions

$\alpha = \infty$

■ Earthquake magnitudes

— $\alpha = 3$

■ Size of files transferred on a network

— $\alpha = 2$

■ Crimes committed by individuals

— $\alpha = 1$

■ Consecutive nights of being homeless

— $\alpha = 1$

■ Generally: Confounding Factors

Pareto Principle (2)

"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?

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I'm speculating here, but
FAFSA.... and students
whose parents didn't have
SSNs, or had 2000 as birth
year, makes me think...

CHESTERTON's Fence

**If you don't see the use of [a fence],
I certainly won't let you clear it
away. Go away and think.**

**Then, when you can come back and
tell me that you do see the use of it,
I may allow you to destroy it.**

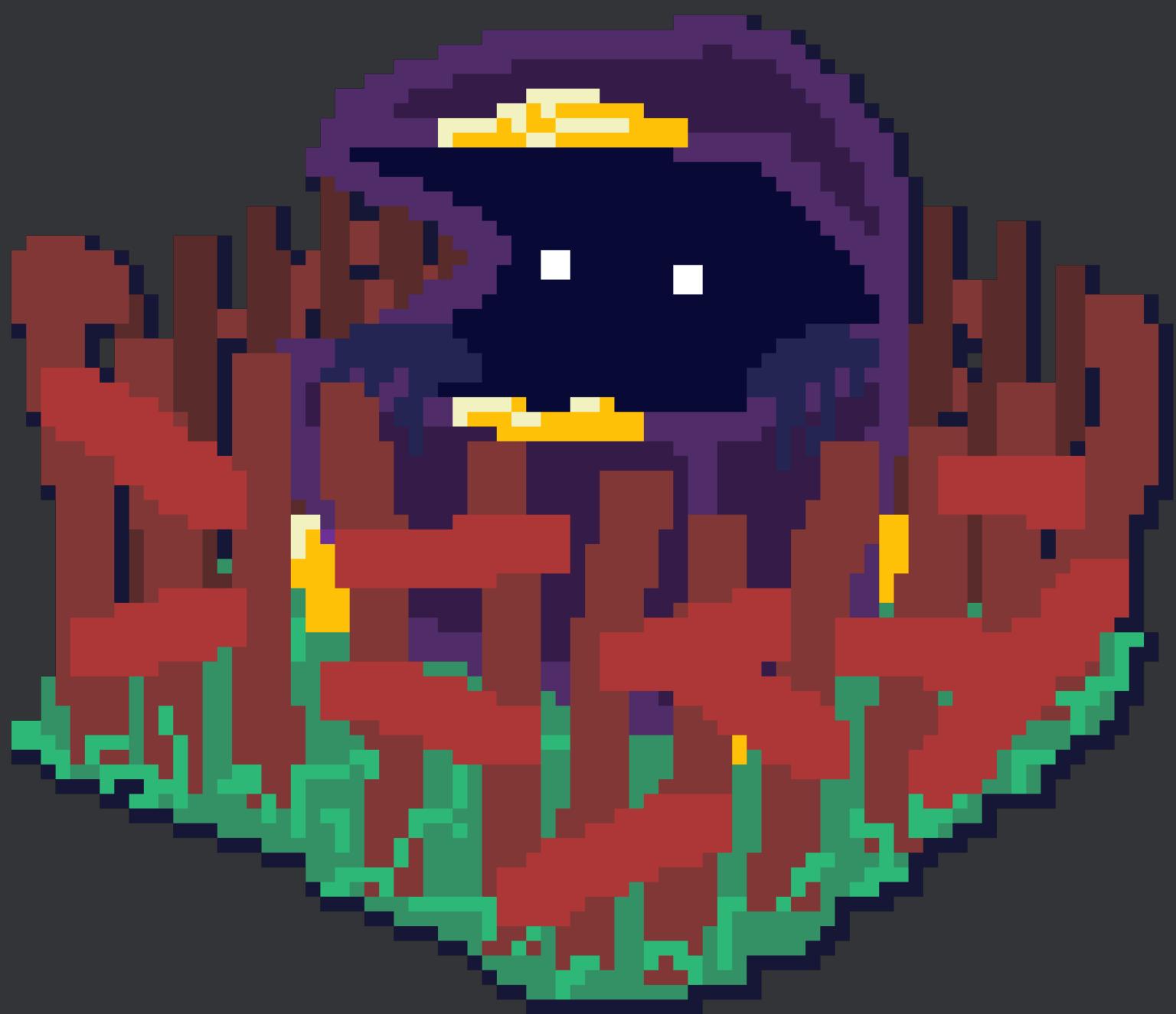
— G. K. Chesterton, 1929

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The Foolish Reformer will
remove any fence in their way

The Intelligent Reformer will
say:

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:
 - Comments, ADRs (Architectural Decision Records), PRs
 - 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"

-- Apocraphally **Robert A. Heinlein**

- Cranstoning

-- See also "Yak Shaving"



THE PUPPET MASTERS
by Robert A. Heinlein

Cranstoning



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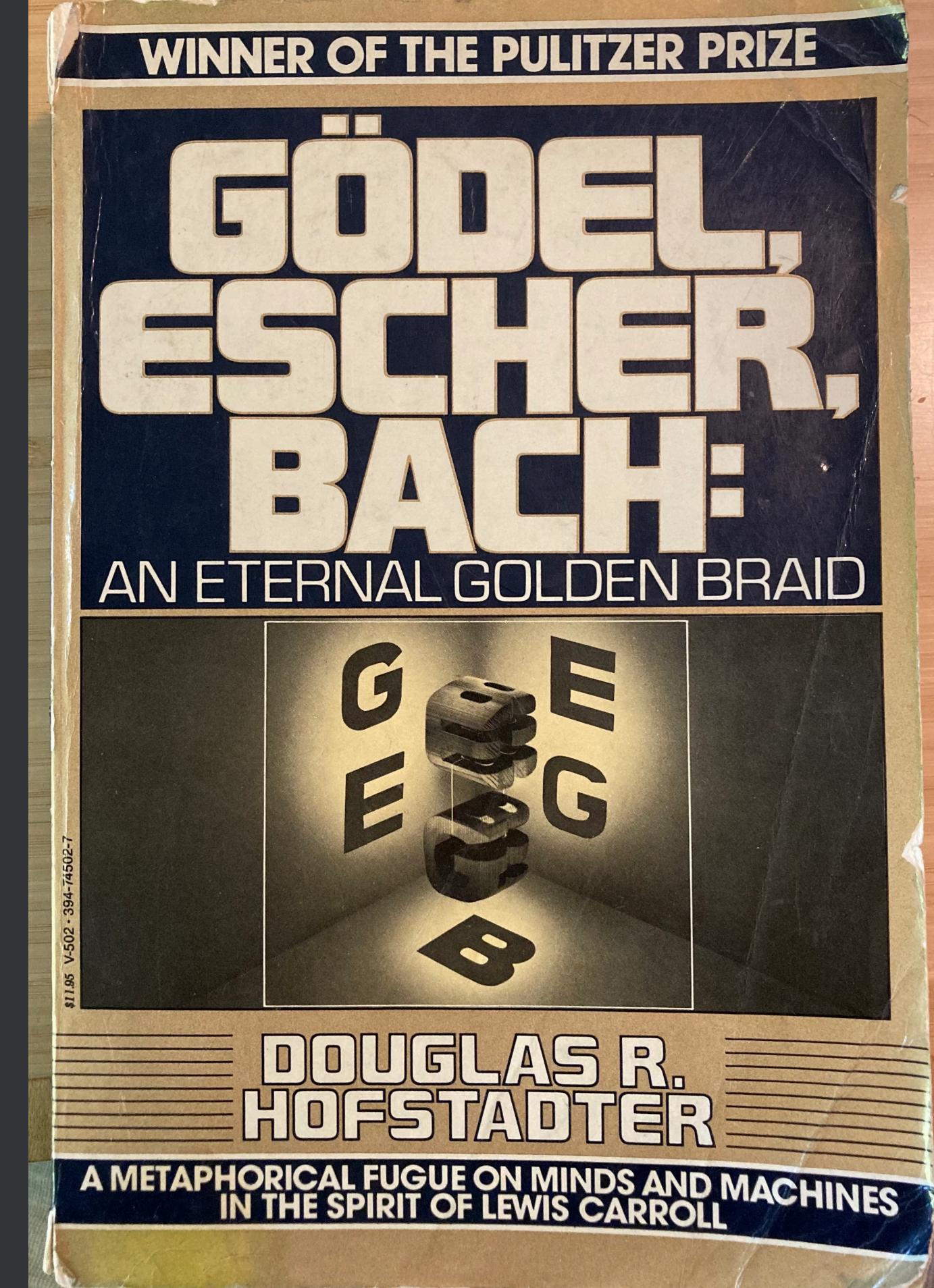
Meme Laws (cont.)

- 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...

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TEXT: Then: Hofstader's Law may not be a meme law, nor are laws that are corollarys to it, can straddle between meme laws and useful laws.

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

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The timeline here is key. In six months, the system will still be 18-24 months away.

That system diagram we saw in the beginning? How far from completion do you think it way. (Pause)
18-24 months.

Predictive value: If you come across this: insist that is solve 1 problem for 1 user in 1 month.
(The TTS DevTools team is living this with their work on Rails Template)

Quiz Time

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?

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~~
- 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 CONstruct 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 -> digestion -> evolution -> Gall bladder

Fill in the blank

We've met the needs of 80% of our users in two sprints, so by the _____ we may need another **eight** sprints for the other 20%.

Answer

We've met the needs of 80% of our users in two sprints, so by **Pareto Principle** we'll need another **eight** sprints for the other 20%.

How do you respond?

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

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

How do you respond?

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

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



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



1



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James and Heather Q

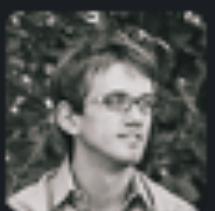


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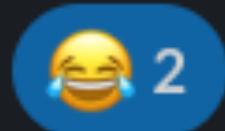
3 replies



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

13 days ago

Hofstadter's law!



1



James and Heather A

Thank you

Summary Slide

And laws to look forward to in a future version

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

Resources

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

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