

# Technical Neglect

Kevlin Henney

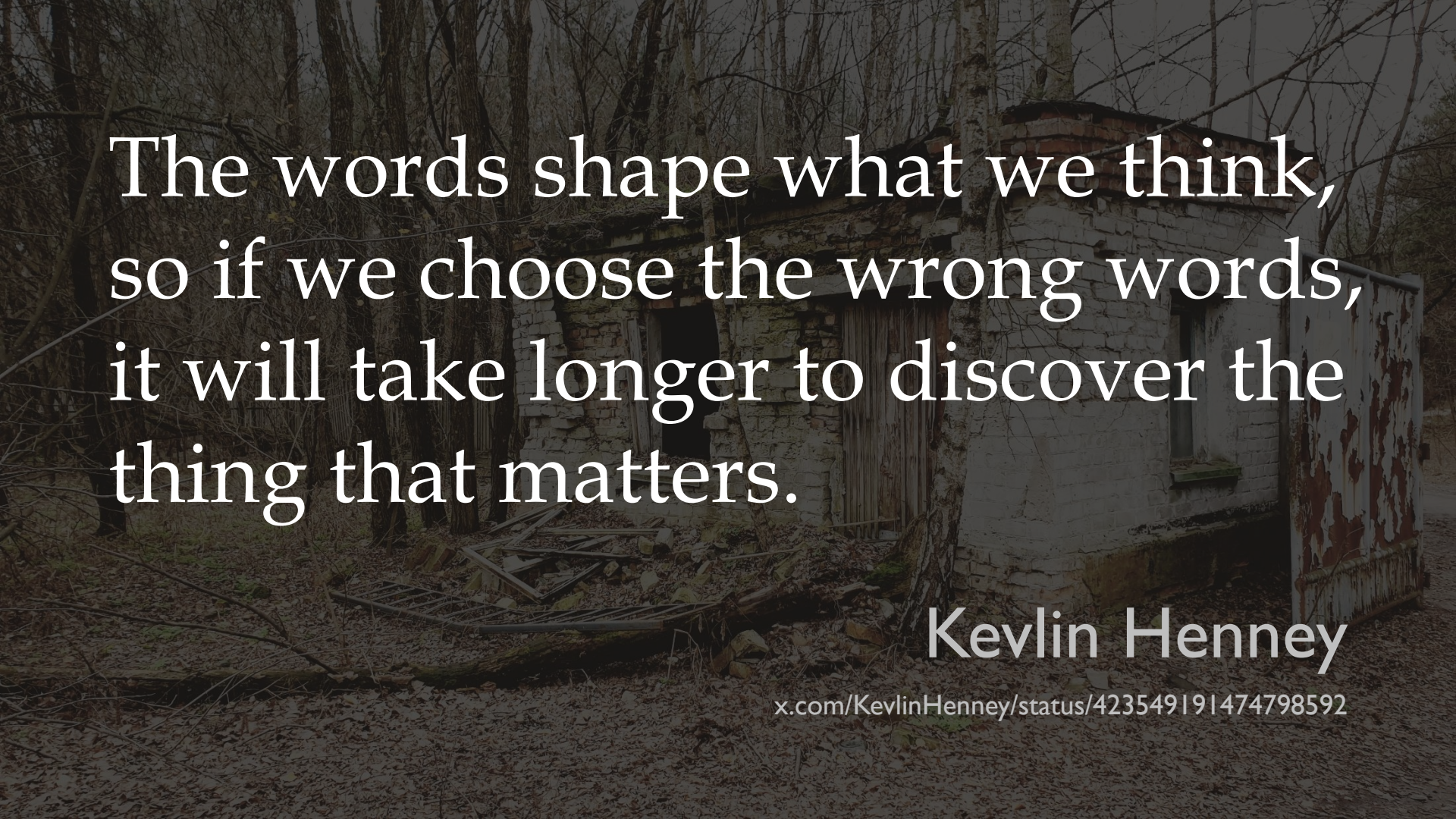






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[about.me/kevlin](https://about.me/kevlin)





The words shape what we think,  
so if we choose the wrong words,  
it will take longer to discover the  
thing that matters.

Kevlin Henney

[x.com/KevlinHenney/status/423549191474798592](https://x.com/KevlinHenney/status/423549191474798592)



A photograph of a dilapidated, abandoned building in a wooded area. The building is constructed of light-colored stone or concrete blocks, with significant peeling and crumbling. The roof is partially collapsed, showing exposed brickwork. A large, rusted metal door stands open on the right side. The surrounding area is filled with bare trees and fallen leaves, suggesting a late autumn or winter setting. The overall mood is one of neglect and decay.

technical  
debt



A photograph of a small, abandoned building with a brick chimney and a rusted metal door, surrounded by bare trees and fallen leaves. The text "technical neglect" is overlaid in a large, white, serif font.


technical  
neglect









A dark, moody background image of a beach. In the foreground, a piece of weathered driftwood lies on the sand, partially covered by dry grass. The background shows the ocean and a dark sky. The overall tone is somber and contemplative.

As an evolving program is continually changed, its complexity, reflecting deteriorating structure, increases unless work is done to maintain or reduce it.

Meir M Lehman

“Programs, Life Cycles, and Laws of Software Evolution”



A black and white photograph of a small, weathered boat on a grassy beach, with the ocean in the background. The boat is tilted and appears to be in poor condition, with some parts missing or broken. The background shows a calm sea and a clear sky.

deteriorating structure

Meir M Lehman

“Programs, Life Cycles, and Laws of Software Evolution”



A black and white photograph of a beach. In the foreground, a small, light-colored boat is partially buried in the sand and grass. The ocean stretches to the horizon under a clear sky. The text "work is done to maintain or reduce it" is overlaid in white, serif font.

work is done to maintain or reduce it

Meir M Lehman

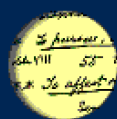
“Programs, Life Cycles, and Laws of Software Evolution”



A grayscale photograph of a beach scene. In the foreground, a piece of weathered driftwood lies on the sand, partially covered by sparse, dry grass. The middle ground shows the calm surface of the ocean meeting the shore. The background is a clear, light-colored sky. The word "maintenance" is overlaid in a large, white, serif font across the center of the image.

maintenance



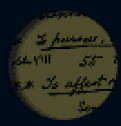


# Oxford English Dictionary

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OXFORD UNIVERSITY PRESS





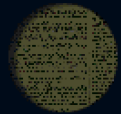
Oxford

English



# metaphor

Dictionary



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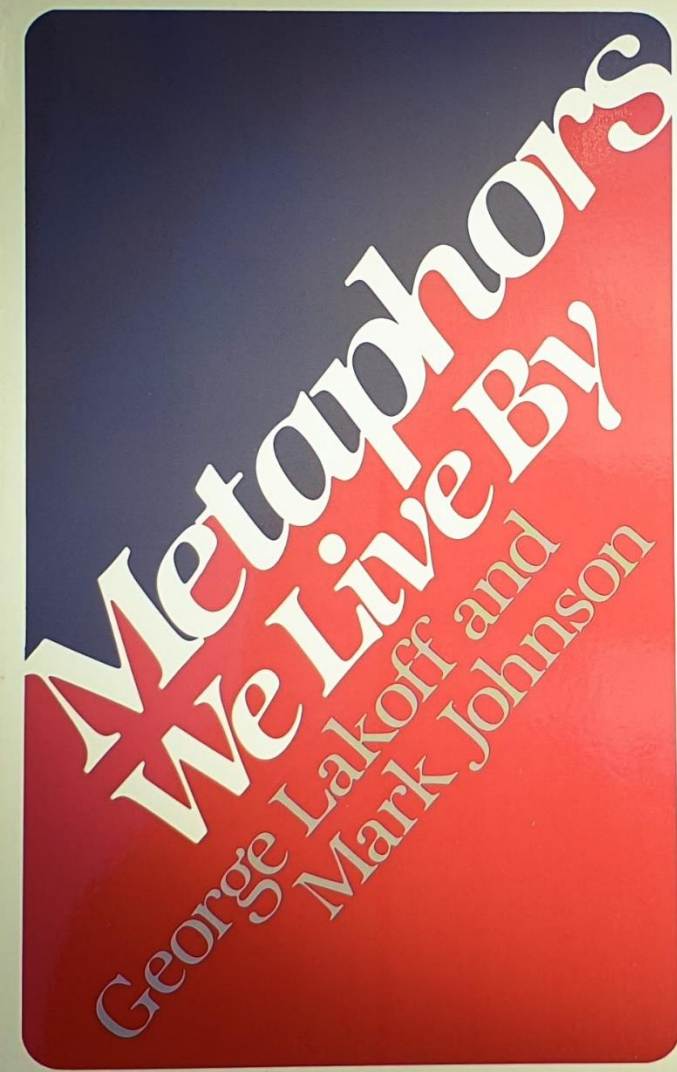
The figure of speech in which a name or descriptive term is transferred to some object different from, but analogous to, that to which it is properly applicable.



μεταφορα

transfer







The essence of metaphor  
is understanding and  
experiencing one kind of  
thing in terms of another.



TIME IS MONEY

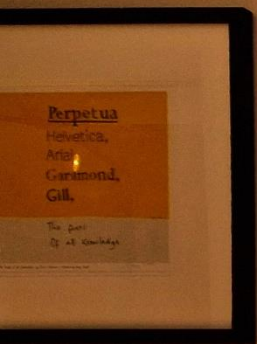
ARGUMENT IS WAR

ARGUMENTS ARE BUILDINGS

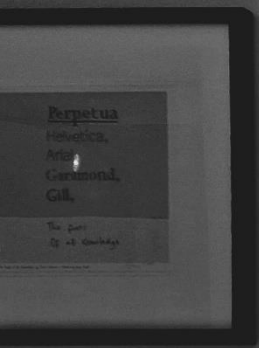
HAPPY IS UP; SAD IS DOWN

LOVE IS A JOURNEY

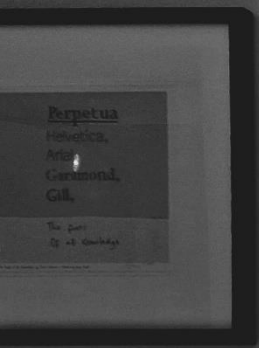






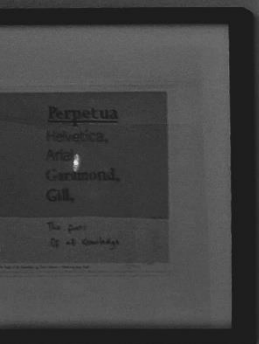






Frame

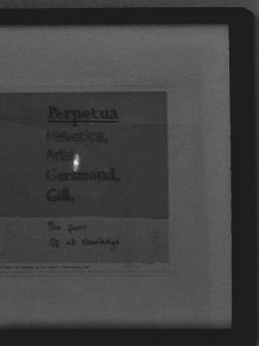




View

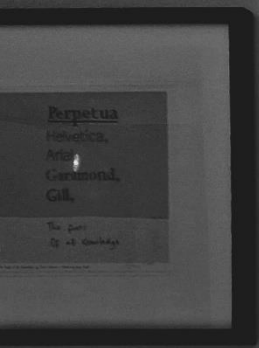






Motel

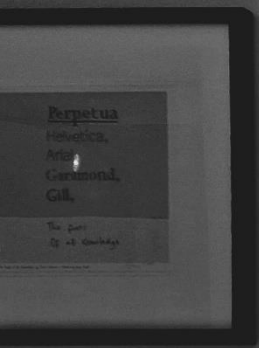




Close







Resize?



Blind?





It will never map its target perfectly  
— a metaphor is a conceit not an  
identity.

Kevlin Henney

“On Exactitude in Technical Debt”

[oreilly.com/radar/on-exactitude-in-technical-debt](https://oreilly.com/radar/on-exactitude-in-technical-debt)

To be considered good, a metaphor has to offer a number of points of useful correspondence with what is being described.

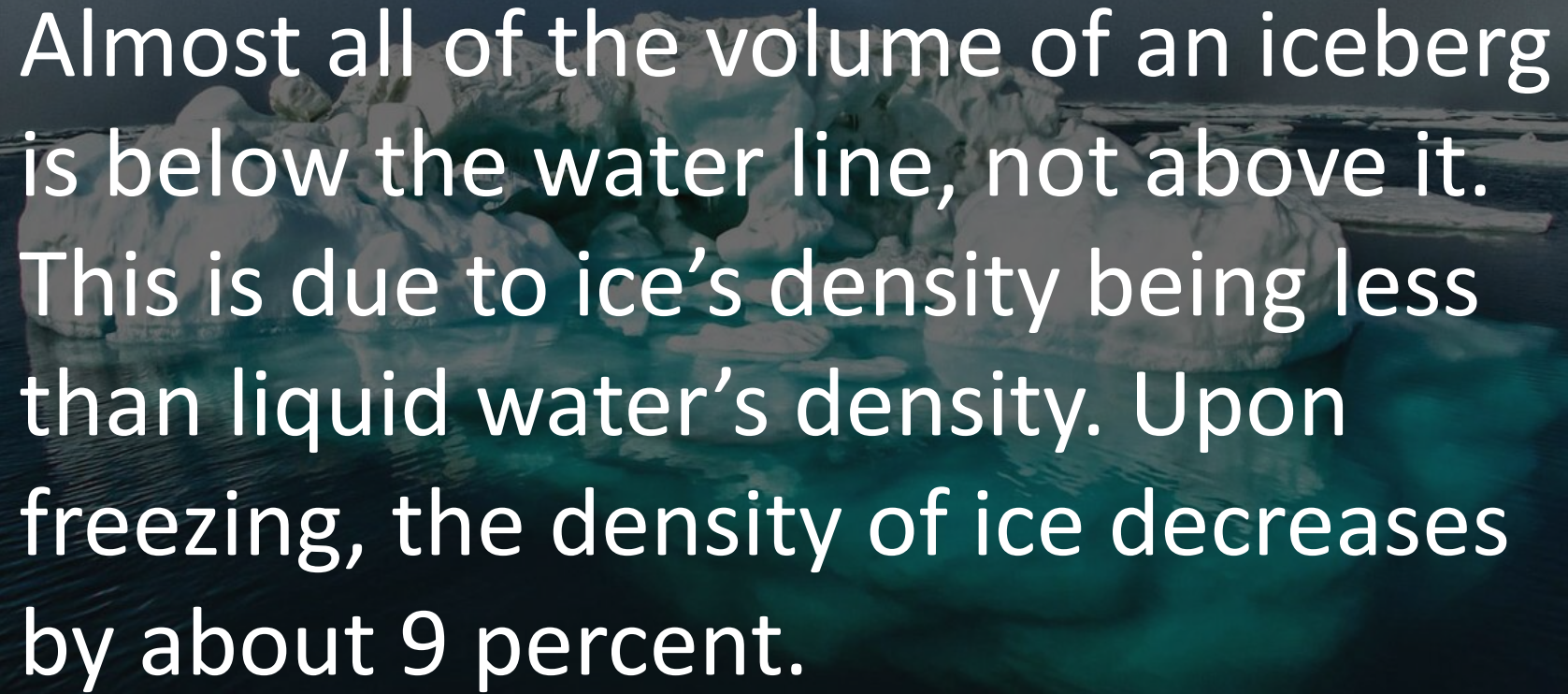
Kevlin Henney

“On Exactitude in Technical Debt”

[oreilly.com/radar/on-exactitude-in-technical-debt](https://oreilly.com/radar/on-exactitude-in-technical-debt)





A large iceberg floats in the ocean, with its massive, jagged base submerged below the water line and only a smaller, more rounded portion visible above. The water is dark blue, and the sky is overcast. The text is overlaid on the image in a white, sans-serif font.

Almost all of the volume of an iceberg is below the water line, not above it. This is due to ice's density being less than liquid water's density. Upon freezing, the density of ice decreases by about 9 percent.



# The Iceberg Illusion

Success  
is an  
iceberg

SUCCESS!

WHAT PEOPLE  
SEE

Persistence



Failure



Sacrifice



Disappointment



WHAT PEOPLE  
DON'T SEE

Dedication



Hard work



Good habits



@sylviaaduckworth

**Environmental setting:**  
Structure and carer  
interactions

**Behaviour and emotions**

**Surface**

**Beliefs:** My kids are waiting for me at the school gates. I have got to collect them

**Drug related issues:** Drug interactions, side effects

**Mental health status:** Anxiety, mood, psychosis

**Mental health status:** Anxiety, mood, psychosis

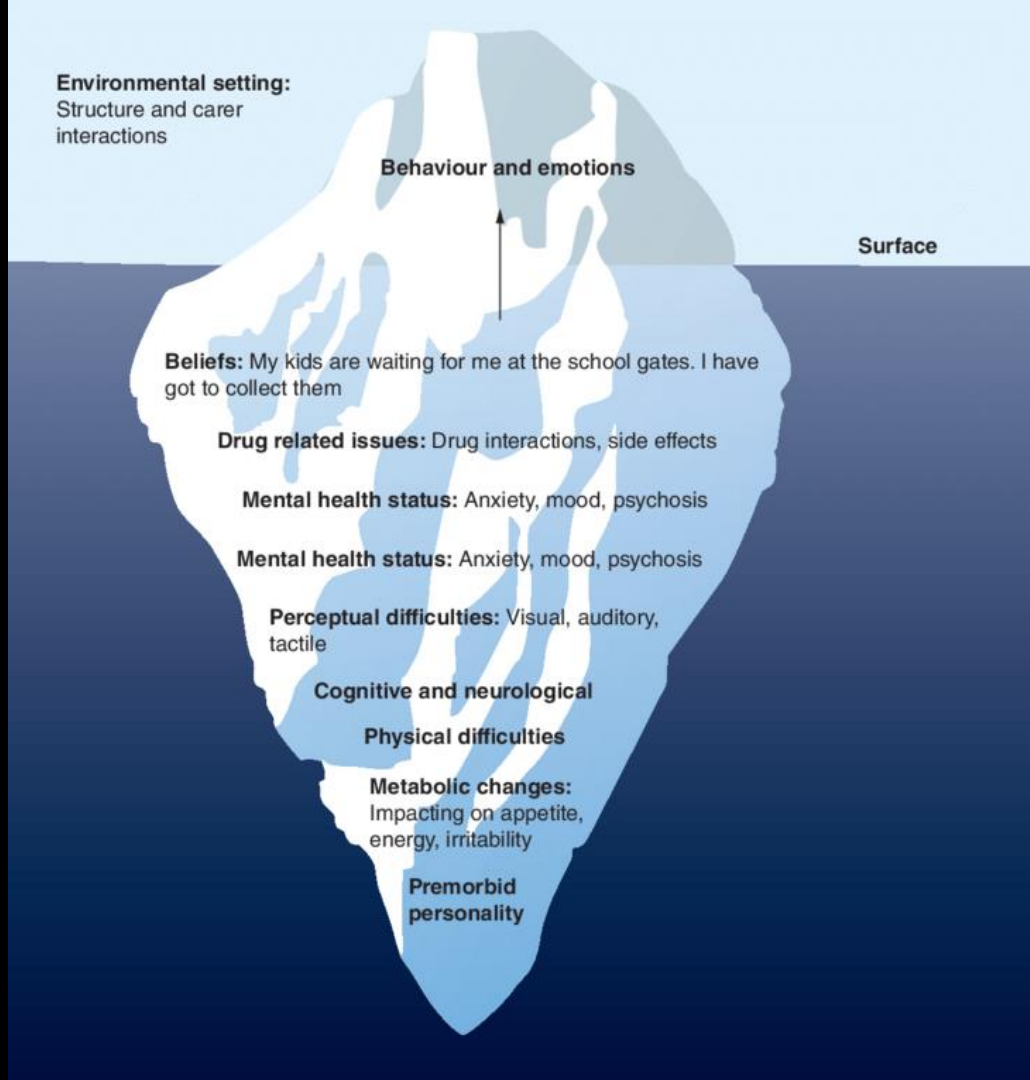
**Perceptual difficulties:** Visual, auditory, tactile

**Cognitive and neurological**

**Physical difficulties**

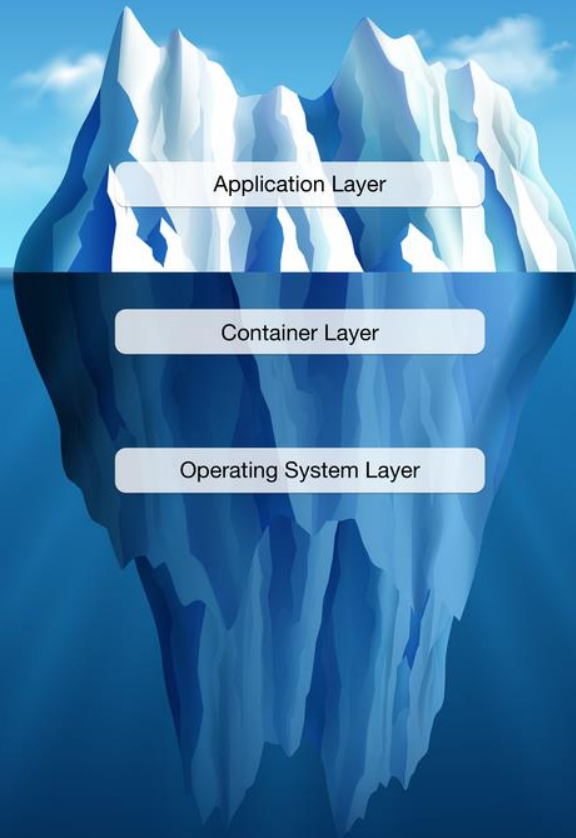
**Metabolic changes:**  
Impacting on appetite,  
energy, irritability

**Premorbid  
personality**





# The DevSecOps Iceberg

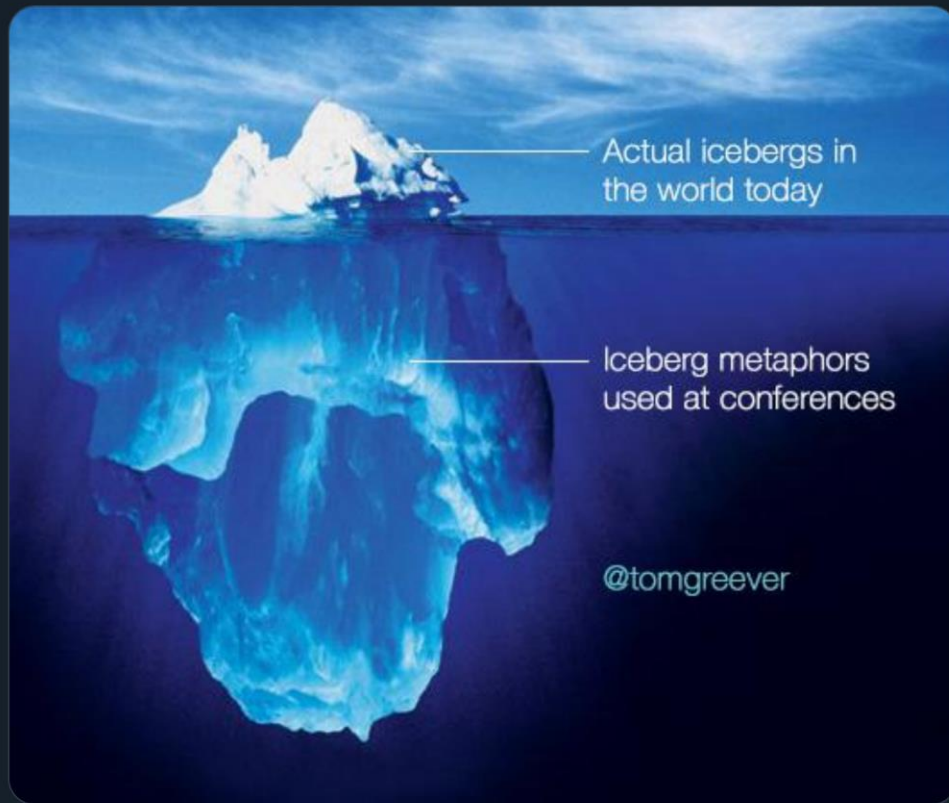




**tomgreever**

@tomgreever

There are more iceberg metaphors than there are actual icebergs.



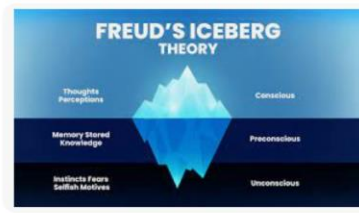
12:03 AM · Jun 2, 2015

[x.com/tomgreever/status/605494853254811648](https://x.com/tomgreever/status/605494853254811648)



## Tools

orga



Simply Psychology  
Freud's Theory of the Unconscious Mind ...



theLLaBB

The Iceberg Illusion & Why Mistakes ...



iceberg analogy. Adapted wi...

Another quality of a good metaphor is that it should not have too many obvious points of conflict.

Kevlin Henney

“On Exactitude in Technical Debt”

[oreilly.com/radar/on-exactitude-in-technical-debt](https://oreilly.com/radar/on-exactitude-in-technical-debt)

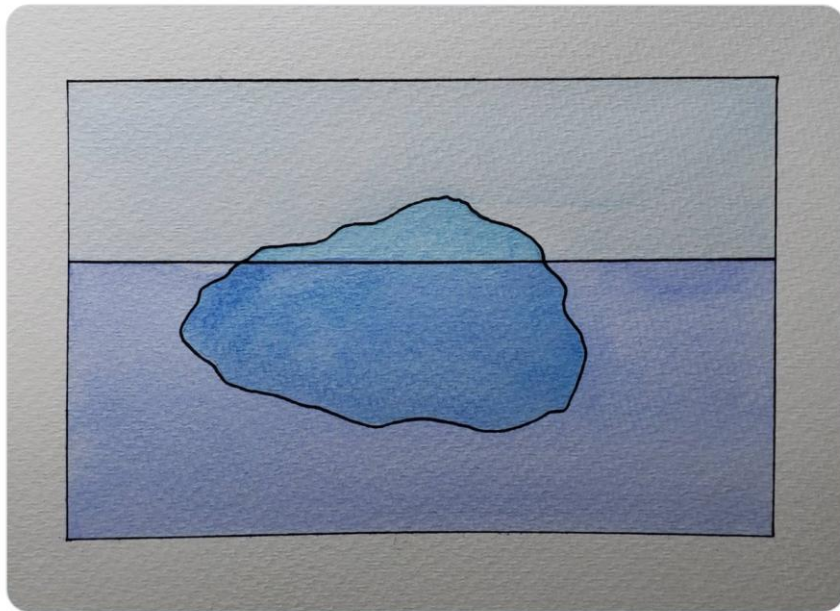


**Megan Thompson-Munson**

@GlacialMeg

Today I channeled my energy into this very unofficial but passionate petition for scientists to start drawing icebergs in their stable orientations. I went to the trouble of painting a stable iceberg with my watercolors, so plz hear me out.

(1/4)



1:18 AM · Feb 19, 2021

[x.com/GlacialMeg/status/1362557149147058178](https://x.com/GlacialMeg/status/1362557149147058178)

280

4.3K

19K

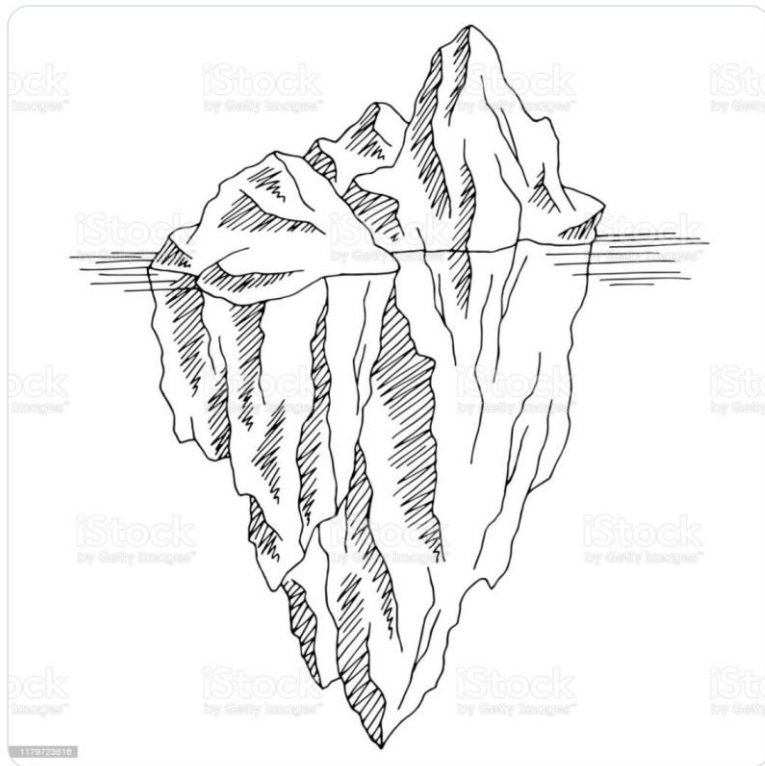
768



Megan Thompson-Munson  
@GlacialMeg

The "classic" image of an iceberg is usually some kind of ice cream cone-shaped hunk of ice with 90% of it below the water's surface and 10% above (source: every iceberg stock photo on the internet).

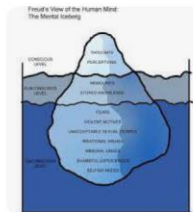
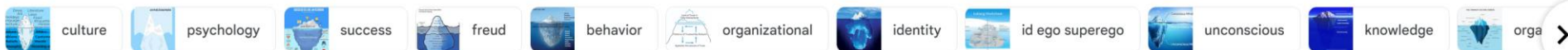
(2/4)



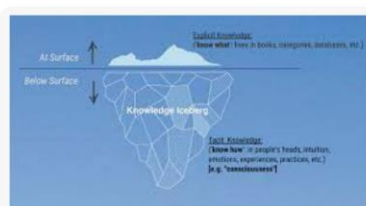


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Tools



Mike Cardus  
Icebergs and how met...



David Loewen  
tip of the icebergs": Clichéd metaphors ...



R ResearchGate  
An iceberg metaphor for ...



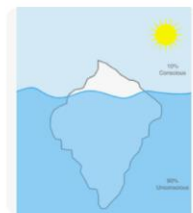
Altair  
Motivational Iceberg Poster ...



R ResearchGate  
The Iceberg Metaphor | Down...



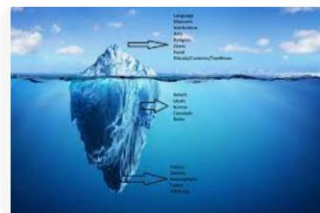
Simply Psychology  
Freud's Theory of the Unconscious Mind ...



Psychology Today  
An Iceberg Is Not a G...



American Institute of Stuttering  
Stuttering metaphors explained



University Blogs - Missouri State University  
Idiom: Tip of the Iceberg ...



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Iceberg Metaphor Images – Browse 1,448 ...



David Loewen  
tip of the icebergs": Clichéd ...



theLaBB  
The Iceberg Illusion & Why Mistakes ...



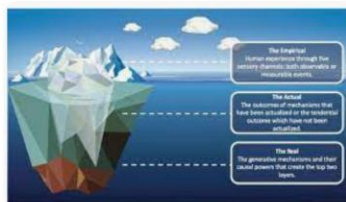
Elena Dasgupta-Tsinikas, LCSW  
The Iceberg: A Metaphor for Healing



Simply Psychology  
Freud's Theory of th...



VectorStock  
Personal iceberg metaphor Royal...



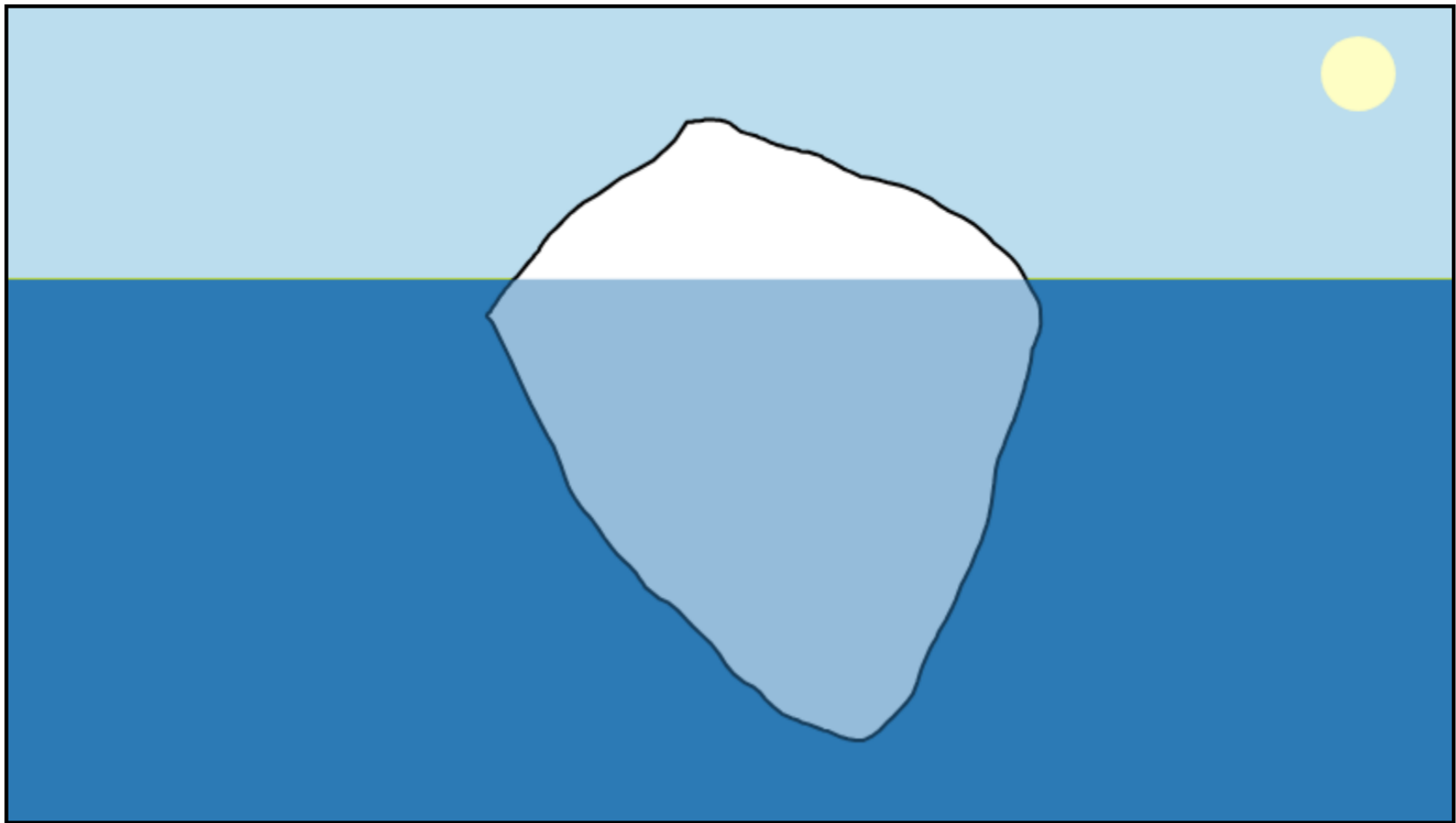
R ResearchGate  
An Iceberg metaphor explaining the ...



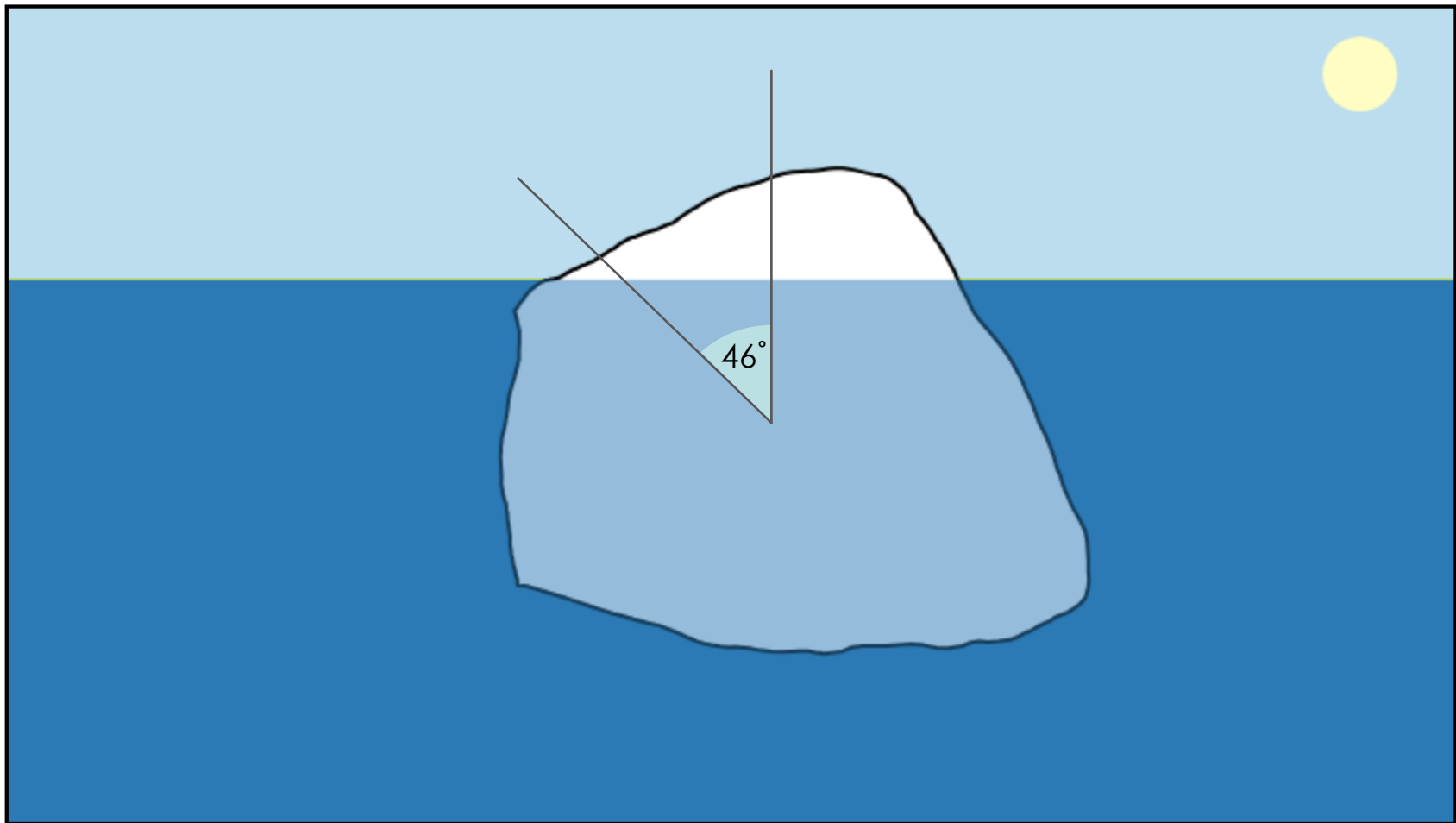
Medium  
The Iceberg of How. A model to help ...



R ResearchGate  
iceberg analogy. Adapted wi...







The third quality of a metaphor that makes it effective is familiarity to its audience.

Kevlin Henney

“On Exactitude in Technical Debt”

[oreilly.com/radar/on-exactitude-in-technical-debt](https://oreilly.com/radar/on-exactitude-in-technical-debt)

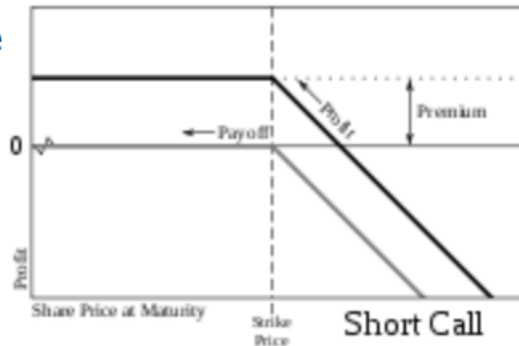


# Bad code isn't Technical Debt, it's an unhedged Call Option

Jul 23rd, 2010 by [steve.freeman](#).

I'd been meaning to write this up for a while, and now Nat Pryce has written up the [140 character version](#).

This is all [Chris Matts](#)' idea. He realised that the problem with the "Technical Debt" metaphor is that for managers debt can be a good thing. Executives can be required to take on more debt because it makes the finances work better, it might even be encouraged by tax breaks. This is not the same debt as your personal credit card. Chris came up with a better metaphor, the *Call Option*.

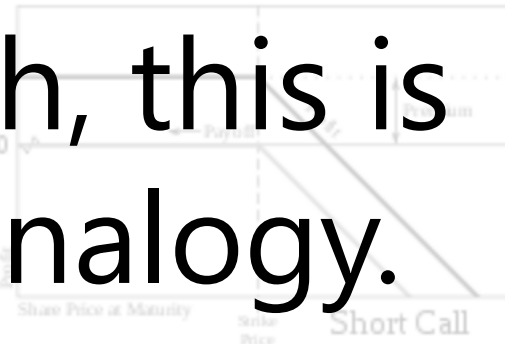


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legacy

✓ PRONUNCIATION ✓ SPELLINGS ✓ ETYMOLOGY ✓ QUOTATIONS

Find

legacy, *n.*legacy, *v.*legal, *a.*

legalese

legalism

legalist

legalitarian, *a.*

legality

legalize, *v.*legalized, *ppl. a.*legally, *adv.*

legalness

legantine, *a.*

legar

legatarian, *a.*legatary, *a. and n.*legate, *n.*<sup>1</sup>

Children of alumni were over 2½ times as likely to be admitted as those without such a connection. **2002** *Philadelphia* Oct. 4/2 'Being a legacy and having dad donate a million bucks isn't even a guarantee.' So, how *do* you get into Penn?

### Draft partial entry September 2007

► *attrib.* Chiefly *Computing*. Designating software or hardware which, although outdated or limiting, is an integral part of a computer system and difficult to replace. Also in extended use.

**1989** *Industry Week* 20 Nov. 46 A migration mechanism enabling the automated conversion of legacy databases and application systems to the integration platform. **1993** *Computer Weekly* 14 Oct. 34/6 Too many IT people ossify with the IT they are comfortable with—they become legacy people, and that's dangerous. **1998** *Byte* (U.K. ed.) June 89/1 The project consists of about 25 legacy FORTRAN codes glued together by Perl. **2005** *Computer Weekly* 29 Nov. 26/1 IT organisations should not dismiss these applications as useless legacy artifacts, destined for rip-and-replace.

Dictionary Advanced Search Results History Bookmarks Options Help Home

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X SORTED BY DATE

Back

Lost for words

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Mark

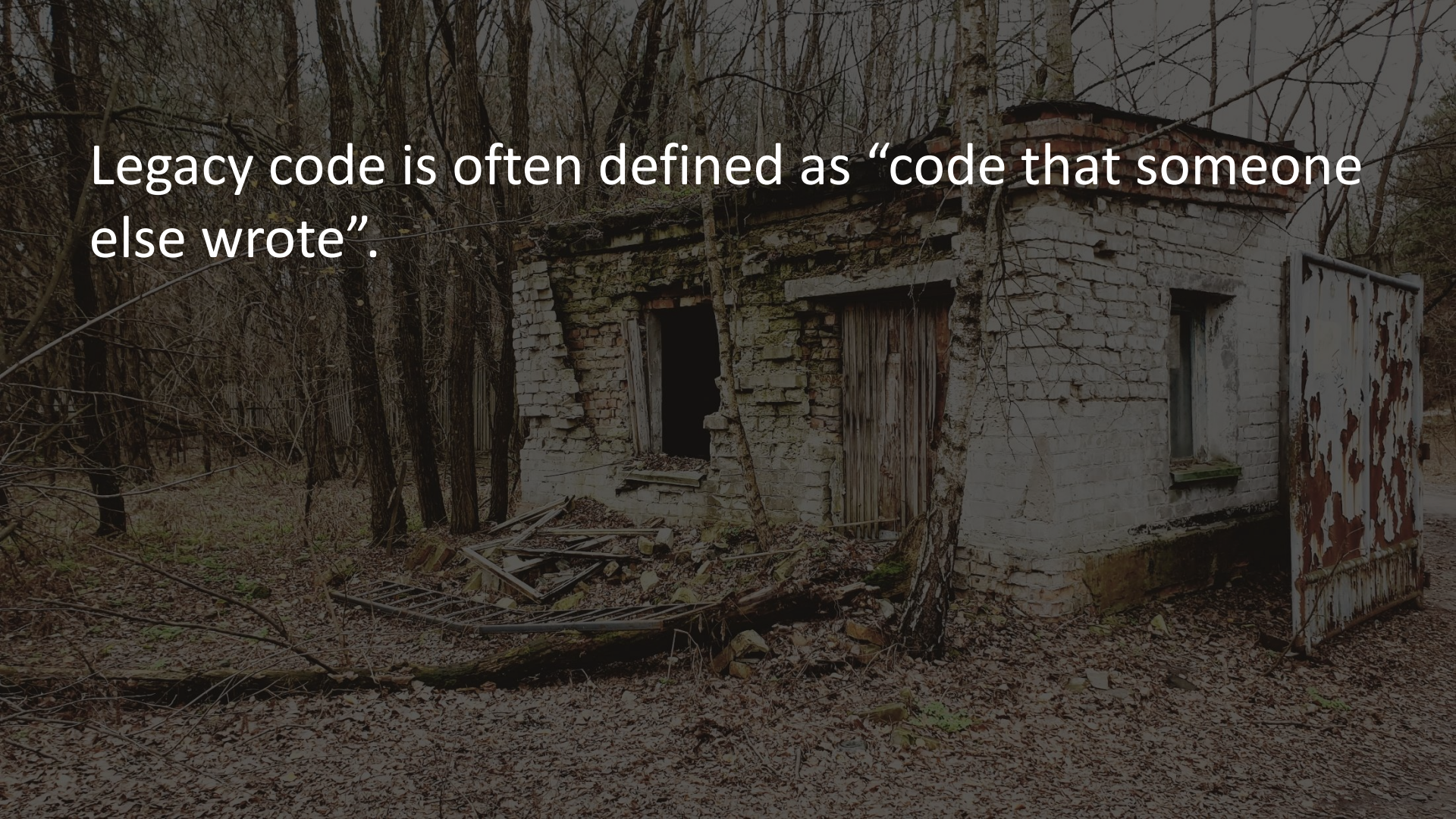
Find in entry

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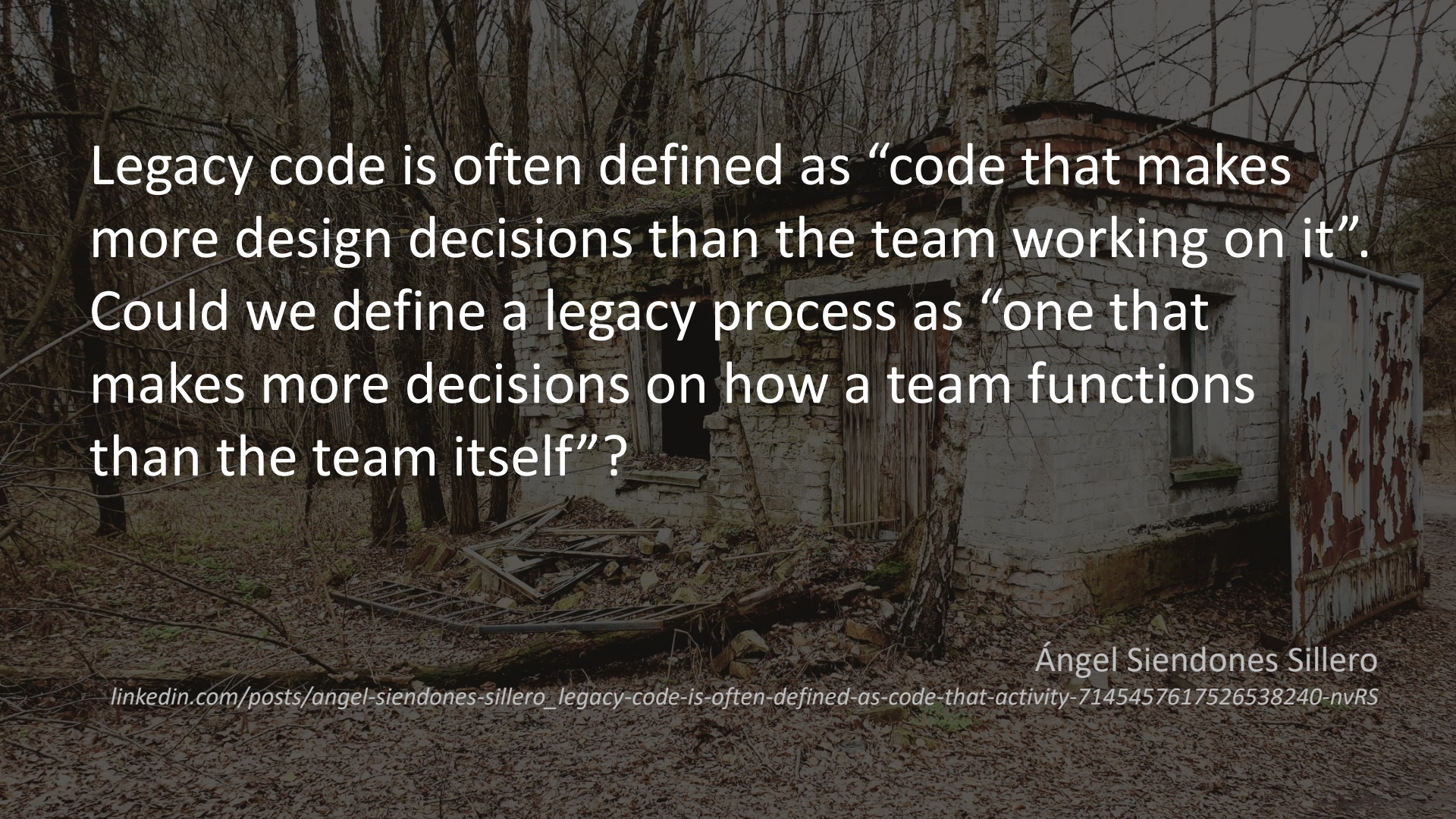
↓



Legacy code is often defined as “code that someone else wrote”.







Legacy code is often defined as “code that makes more design decisions than the team working on it”. Could we define a legacy process as “one that makes more decisions on how a team functions than the team itself”?

Ángel Siendones Sillero

[linkedin.com/posts/angel-siendones-sillero\\_legacy-code-is-often-defined-as-code-that-activity-7145457617526538240-nvRS](https://www.linkedin.com/posts/angel-siendones-sillero_legacy-code-is-often-defined-as-code-that-activity-7145457617526538240-nvRS)

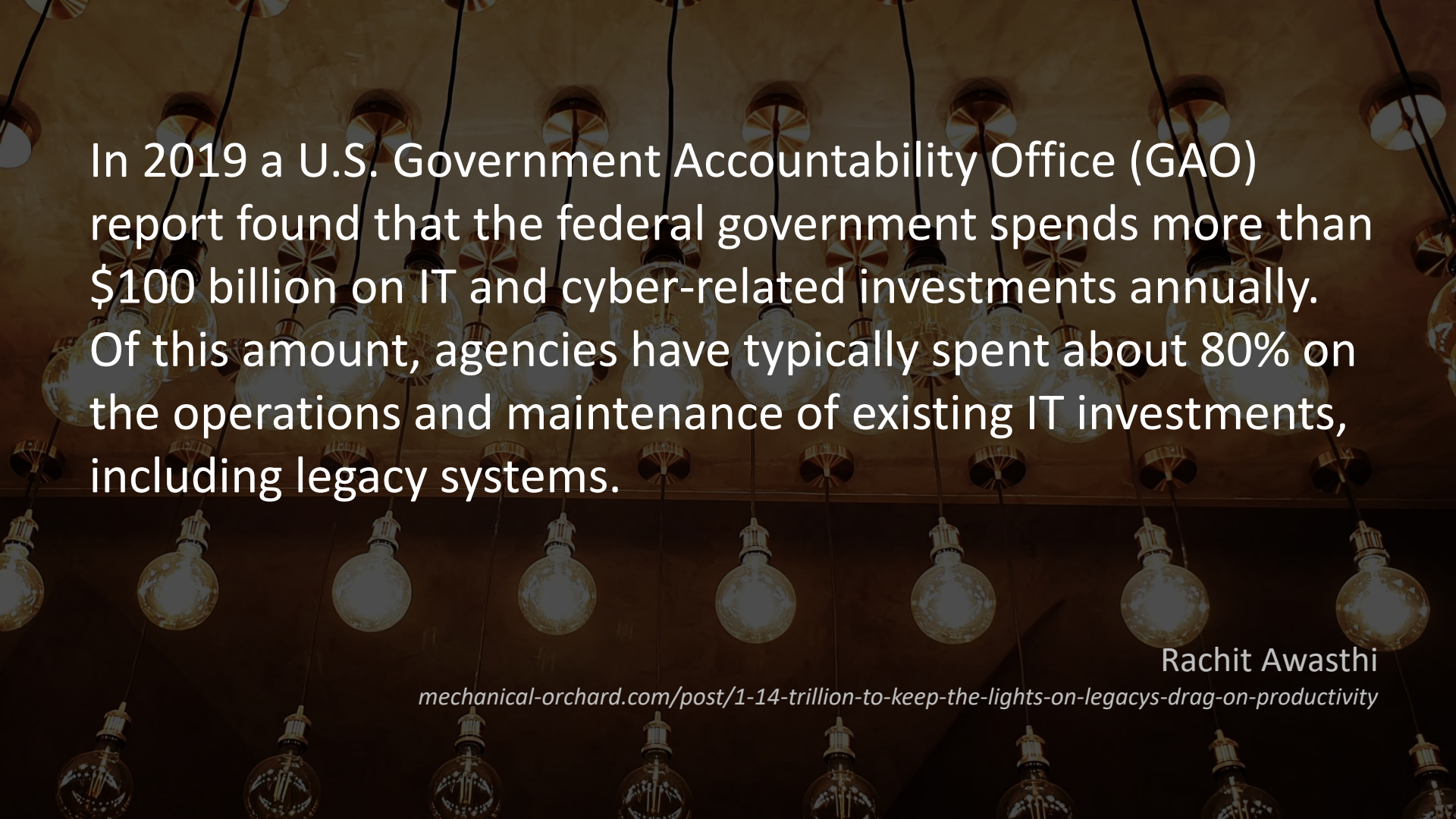




# \$1.14 Trillion to Keep the Lights on: Legacy's Drag on Productivity

Rachit Awasthi

*[mechanical-orchard.com/post/1-14-trillion-to-keep-the-lights-on-legacy-s-drag-on-productivity](https://mechanical-orchard.com/post/1-14-trillion-to-keep-the-lights-on-legacy-s-drag-on-productivity)*

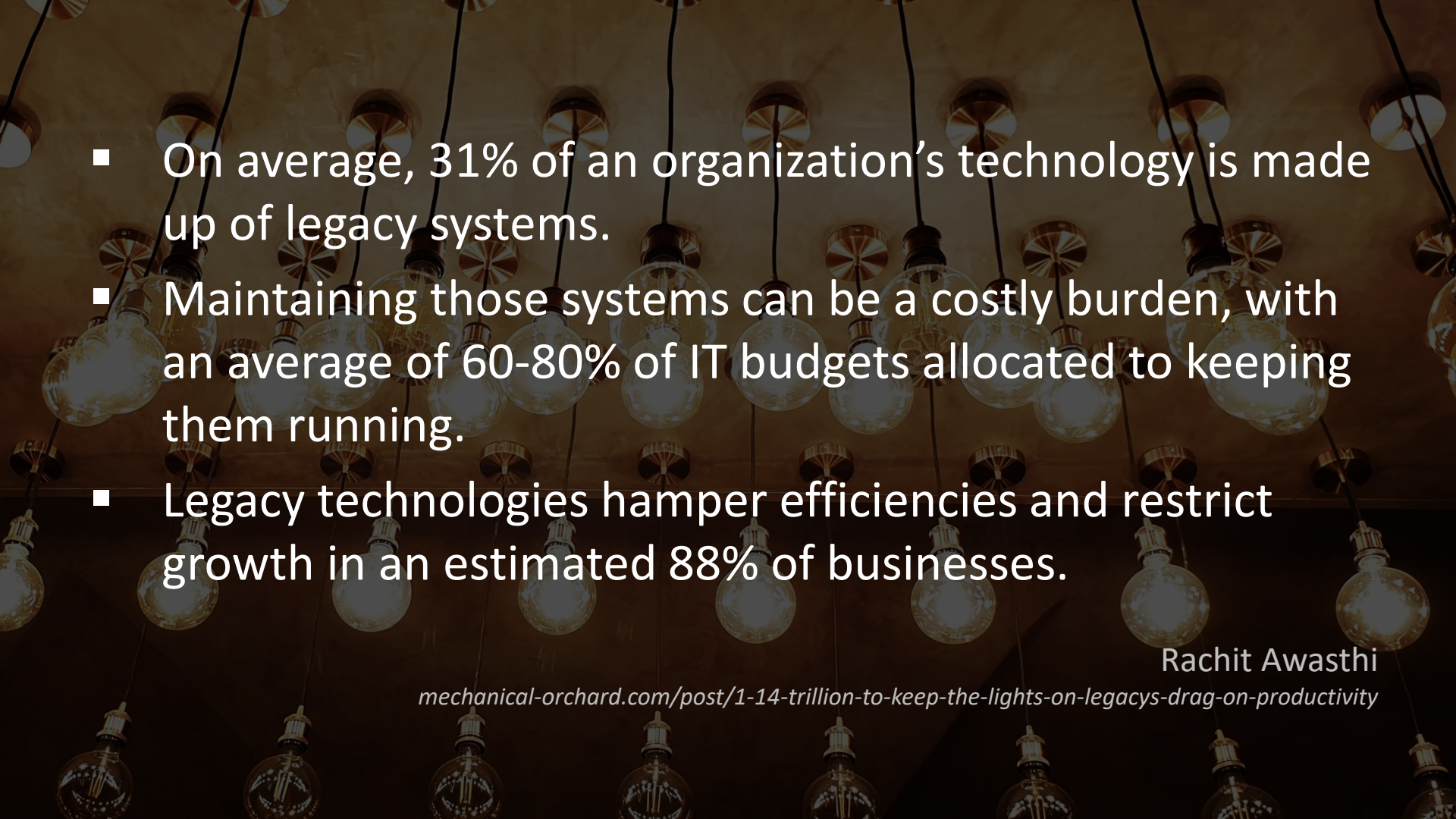


In 2019 a U.S. Government Accountability Office (GAO) report found that the federal government spends more than \$100 billion on IT and cyber-related investments annually. Of this amount, agencies have typically spent about 80% on the operations and maintenance of existing IT investments, including legacy systems.

Rachit Awasthi

*[mechanical-orchard.com/post/1-14-trillion-to-keep-the-lights-on-legacys-drag-on-productivity](https://mechanical-orchard.com/post/1-14-trillion-to-keep-the-lights-on-legacys-drag-on-productivity)*



- 
- On average, 31% of an organization's technology is made up of legacy systems.
  - Maintaining those systems can be a costly burden, with an average of 60-80% of IT budgets allocated to keeping them running.
  - Legacy technologies hamper efficiencies and restrict growth in an estimated 88% of businesses.

Rachit Awasthi

*[mechanical-orchard.com/post/1-14-trillion-to-keep-the-lights-on-legacys-drag-on-productivity](https://mechanical-orchard.com/post/1-14-trillion-to-keep-the-lights-on-legacys-drag-on-productivity)*

creation of legacy code





**Kevlin Henney**

@kevin@mastodon.social

The practical consequence of using LLMs to generate code is that many developers will find they have unwittingly moved themselves into a role they were probably trying to avoid: they have automated the creation of legacy code and have redefined their job role as debugging and fixing such code.

Apr 03, 2023, 18:30 · 🌐 · Web · ↻ 442 · ★ 583

[mastodon.social/@kevin/110136069252675177](https://mastodon.social/@kevin/110136069252675177)

# Can Generative AI Improve Developer Productivity?

HERE'S WHAT THE REAL-LIFE DATA SUGGESTS



More engineering teams are experimenting with generative AI tools like Copilot to ostensibly improve productivity and developer experience. **But what does the quantitative data say?**



Copilot access provided no significant change in efficiency metrics.

Can Generative AI Improve

Developer Productivity?

HERE'S WHAT THE REAL-LIFE DATA SUGGESTS



Copilot access was not significant in mitigating the risk of burnout.

More evidence is required in experimenting with generative AI tools as Copilot consistently improve productivity and developer experience. **But what does the quantitative data say?**

Developers with Copilot access saw a significantly higher bug rate while their issue throughput remained consistent.

# Can Generative AI Improve Developer Productivity?

HERE'S WHAT THE REAL-LIFE DATA SUGGESTS

+41%



More engineering teams are experimenting with generative AI tools like Copilot to ostensibly improve productivity and developer experience. **But what does the quantitative data say?**



# Coding on Copilot

# Coding on Copilot

*2023 Data Shows Downward Pressure on  
Code Quality*



# Coding on Copilot

*2023 Data Shows Downward Pressure on  
Code Quality*

*150m lines of analyzed code + projections for 2024*

We find disconcerting trends for maintainability.

Code churn — the percentage of lines that are reverted or updated less than two weeks after being authored — is projected to double in 2024 compared to its 2021, pre-AI baseline.

*150m lines of analyzed code + projections for 2024*

We further find that the percentage of “added code” and “copy/pasted code” is increasing in proportion to “updated,” “deleted,” and “moved” code.

In this regard, code generated during 2023 more resembles an itinerant contributor, prone to violate the DRY-ness of the repos visited.



# AI Copilot Code Quality

*Evaluating 2024's Increased Defect Rate  
via Code Quality Metrics*

*211m lines of analyzed code + projections for 2025*

# AI Copilot Code Quality

Developers seem to view AI as a means to *write more code*, faster.

Through the lens of “does more code get written?” common sense and research agree: *resounding yes*. AI assistants do *beget more lines*.

# AI Copilot Code Quality

Developers seem to view AI as a means  
to *write more code*

Through the lens of *Defect Rate*  
“written?” community and research  
agree: *resound* — *standards* do  
beget more lines. — *projections for 2025*





# AI Copilot Code Quality

The data in this report contains multiple signs of eroding code quality.

## Evaluating 2024's Increased Defect Rate via Code Quality Metrics

The frequency of copy/pasted lines in commits grew 6% faster than our 2024 prediction.

*211m lines of analyzed code + projections for 2025*

# AI Copilot Code Quality

Meanwhile, the percent of commits with duplicated blocks grew even faster.

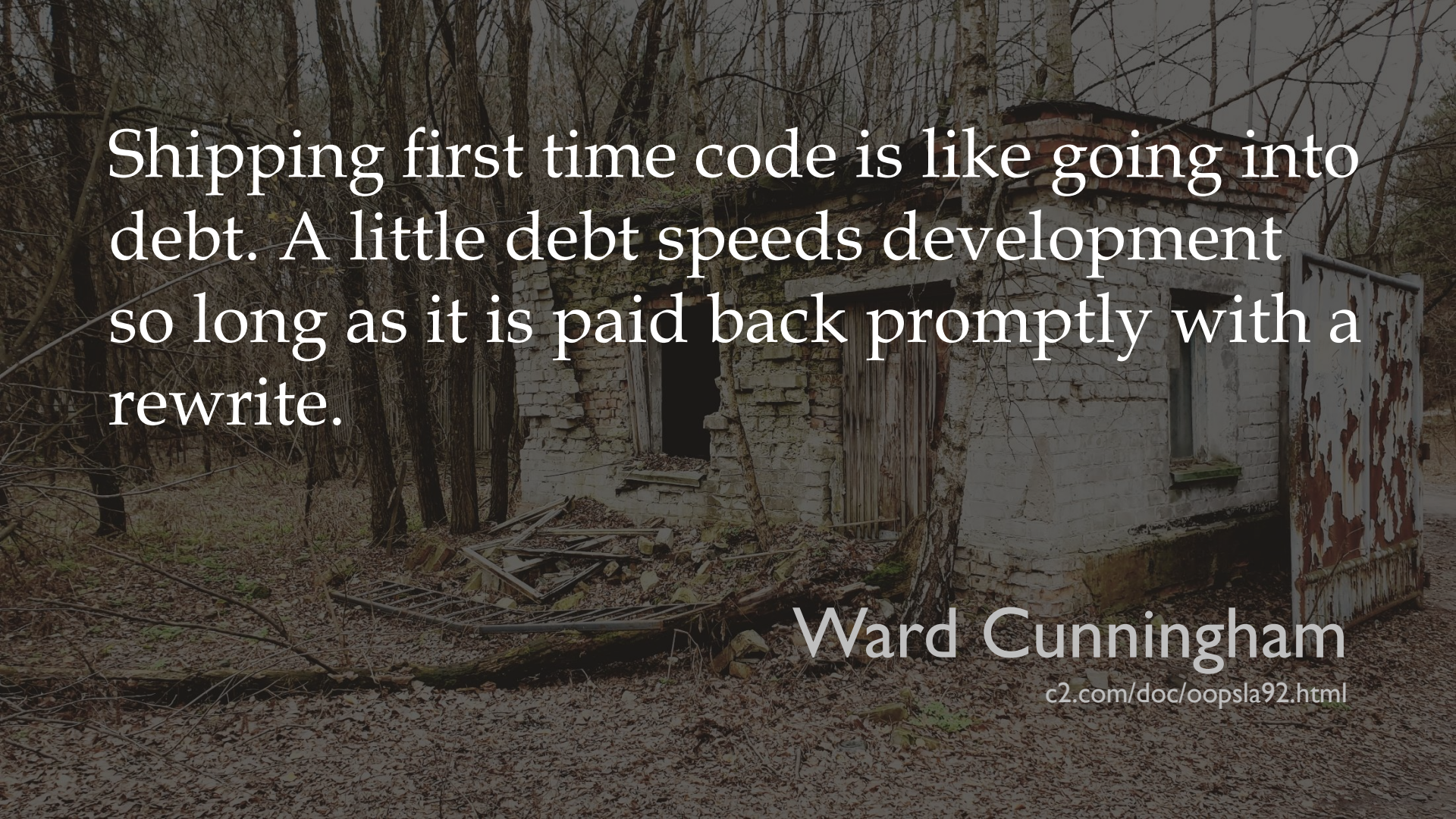
## Evaluating 2024's Increased Defect Rate via Code Quality Metrics

2024 was the first year that “Copy/Pasted” frequency beat “Moved” line frequency among the 211 million changed lines we’ve analyzed over the past five years.







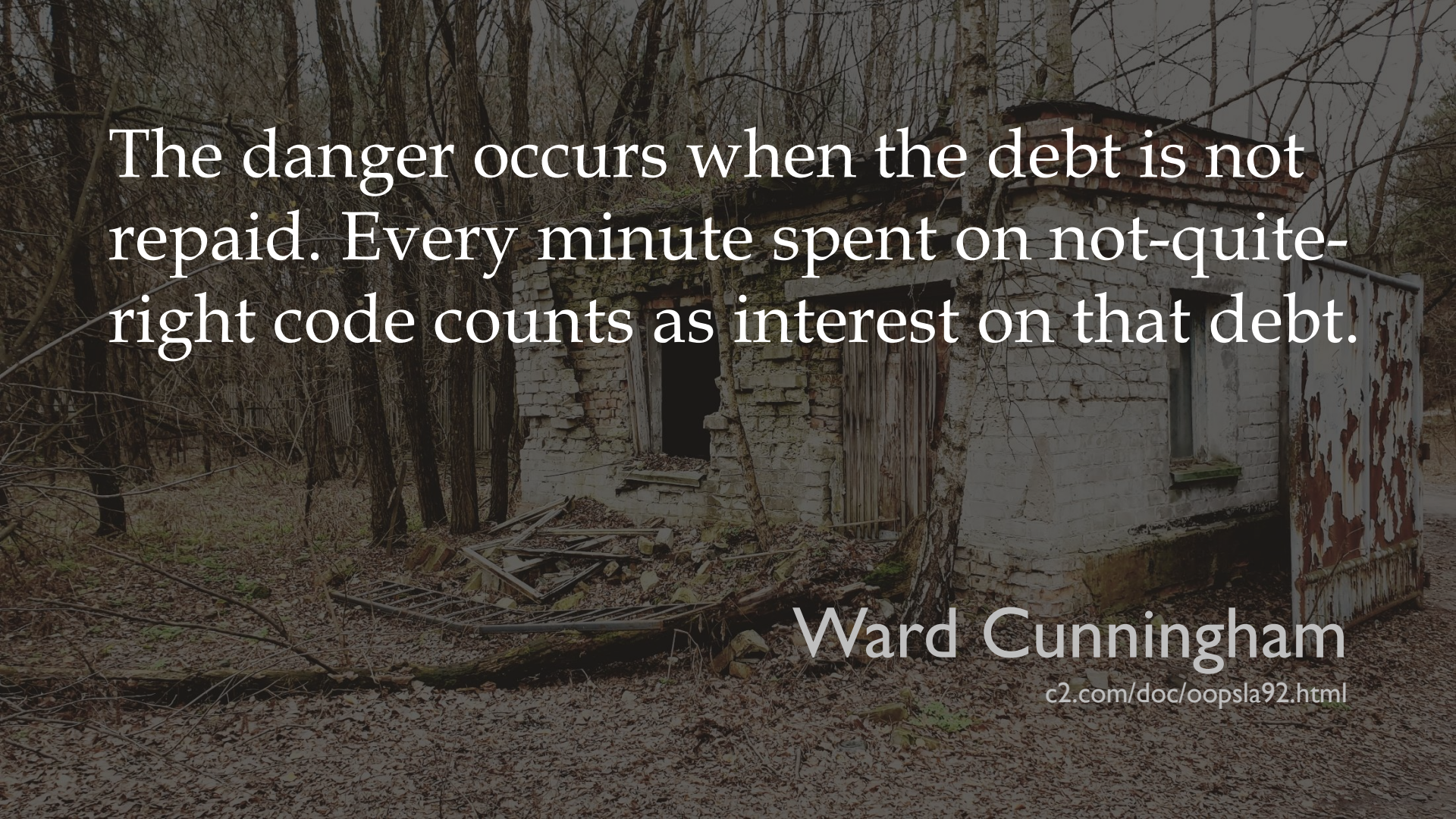


Shipping first time code is like going into debt. A little debt speeds development so long as it is paid back promptly with a rewrite.

Ward Cunningham

[c2.com/doc/oopsla92.html](http://c2.com/doc/oopsla92.html)





The danger occurs when the debt is not repaid. Every minute spent on not-quite-right code counts as interest on that debt.

Ward Cunningham

[c2.com/doc/oopsla92.html](http://c2.com/doc/oopsla92.html)



A photograph of a small, abandoned building in a wooded area. The building is made of light-colored bricks or blocks, many of which are missing or crumbling. The roof is partially collapsed, with some dark material visible. There are several windows and doorways, some of which are boarded up with corrugated metal. A large, rusted metal door is leaning against the right side of the building. The ground is covered in dry leaves and twigs. The background is filled with bare trees, suggesting a late autumn or winter setting. The overall tone is somber and neglected.

technical  
debt



A photograph of a small, abandoned building with white-painted brick walls, showing significant decay and peeling paint. The building is situated in a wooded area with bare trees and a ground covered in fallen leaves. A rusted metal door is visible on the right side of the building. The text "unmanaged technical debt" is overlaid in a large, white, serif font across the center of the image.

unmanaged  
technical  
debt



TIME IS MONEY





**Yvonne Lam**

@yvonnezlam

My theory of tech debt is that housework is the correct metaphor for the thing we call tech debt, but we can't use it because tech has been made up of people who don't do housework, or manage housework being done.

9:13 PM · Mar 29, 2021



4.9K



76

[x.com/yvonnezlam/status/1376628481878990852](https://x.com/yvonnezlam/status/1376628481878990852)





Isabella Beeton



There is no work like early work.

Clear as you go.

Muddle makes more muddle.

Not to wash plates and dishes soon  
after using makes more work.

Isabella Beeton



A grayscale photograph of a beach scene. In the foreground, a piece of weathered driftwood lies on the sand, partially covered by sparse, dry grass. The middle ground shows the calm surface of the ocean meeting the shore. The background is a clear, light-colored sky. The word "maintenance" is overlaid in a large, white, serif font across the center of the image.

maintenance

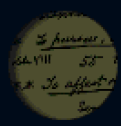
A black and white photograph of a beach scene. In the foreground, a small, light-colored boat is partially buried in tall, dry grass on the left side. The beach extends to the right, meeting the ocean. The water is calm with gentle ripples. The sky is a uniform, dark grey. The word "action" is written in a large, white, serif font, centered horizontally and partially overlapping the beach and the ocean.

action



A black and white photograph of a small, abandoned boat on a grassy beach. The boat is tilted and appears to be made of wood or metal, with some parts missing or damaged. It is surrounded by tall, dry grass. In the background, the ocean stretches to the horizon under a clear sky. The word "inaction" is overlaid in large, white, serif font across the center of the image.

inaction



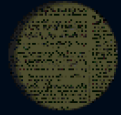
Oxford



English

neglect

Dictionary



OXFORD UNIVERSITY PRESS

Want of attention to what ought to be done; the fact of leaving something undone or unattended to; negligence.

Value demand represents the demands customers make for the things they want, things that are of value to them.

Failure demand is demand caused by a failure to do something or do something right.

John Seddon

*Freedom from Command & Control — A better way to make work work*





How we spend our  
days is, of course, how  
we spend our lives.

Annie Dillard