

The Specialisation Trap

Annie Vella

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A Quick Introduction

Software Engineer | Technical Leader | Self-professed Nerd

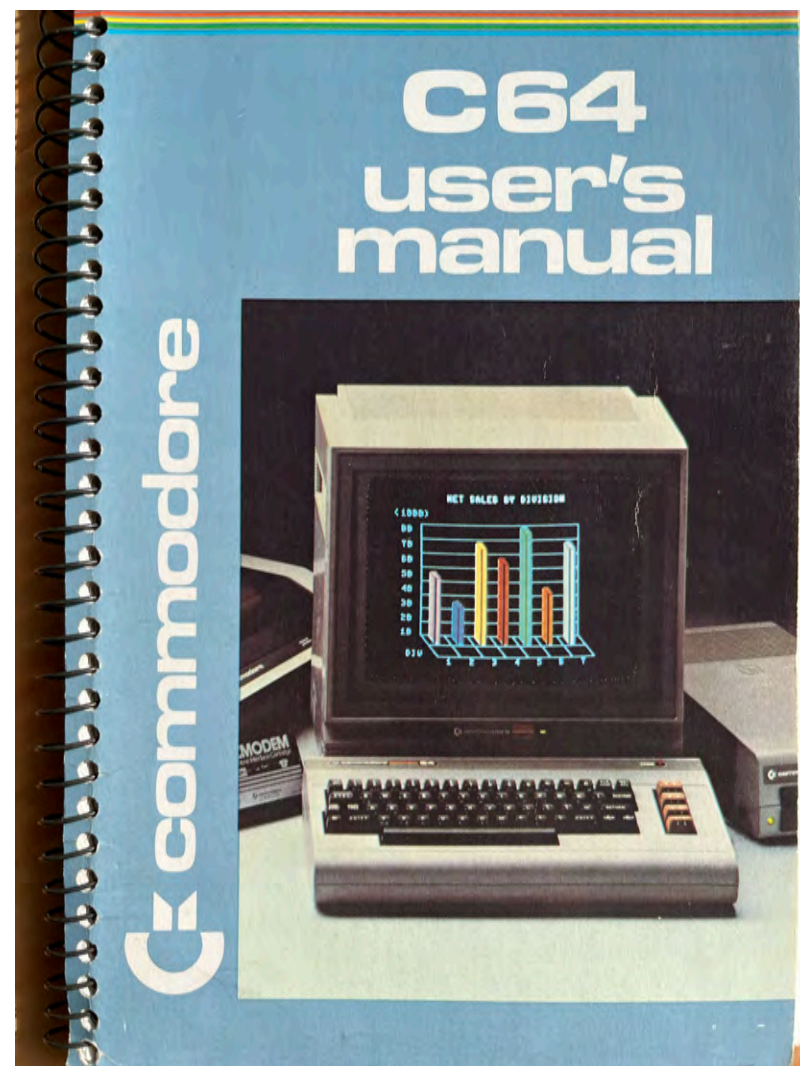
Annie Vella

Distinguished Engineer, Westpac New Zealand

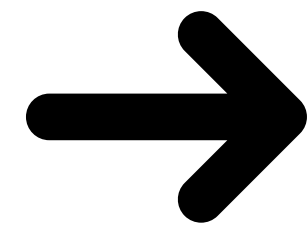
Masters of Engineering, University of Auckland



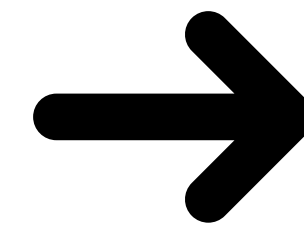
Where It All Started



Circa 1987



November 2022



February 2024

High Adoption. Uneven Returns.

90%

adoption

5%

sophisticated use

— KPMG + UT Austin (HBR, March 2026)

So what explains who thrives and who doesn't?

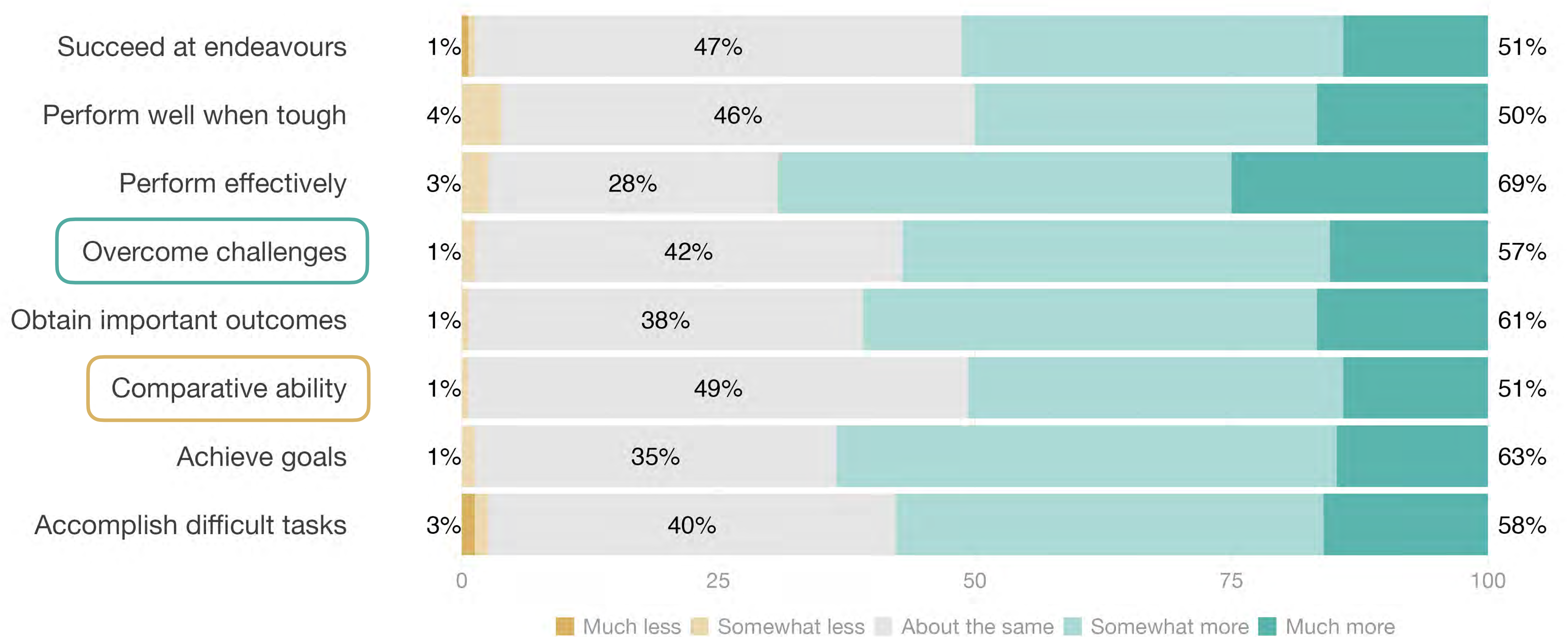
Self-Efficacy

An individual's belief in his or her capacity to execute behaviours necessary to produce specific performance attainments.

Albert Bandura · Stanford University, 1977

What I Found

Perceived shift in self-efficacy attributed to AI tool use · Q1 baseline · n = 156



Mindset Over Circumstance

Self-efficacy predicted every experiential outcome

10.68x

- Feedback loops
- Cognitive load
- Flow state
- Skill development
- **Productivity**

More likely to report improved productivity

Not demographics, seniority or tools

Who Felt More Capable?

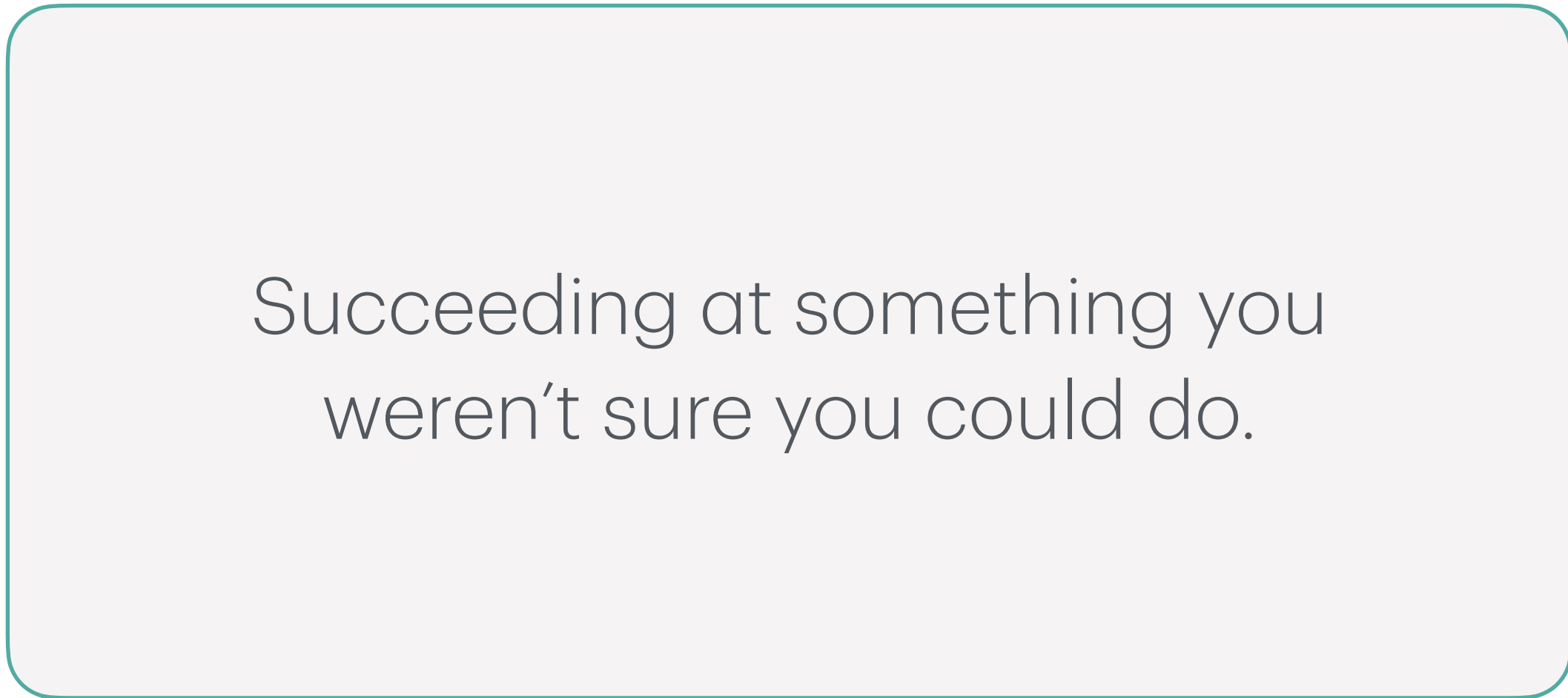
~~Gender
Role
Programming Language
Company Size~~

Broader use > Work only
Juniors > Seniors

Where Does Self-Efficacy Come From?

Sources of self-efficacy:

- Vicarious experiences
- Verbal persuasion
- Emotional states
- **Mastery experiences**



Succeeding at something you weren't sure you could do.

Permission to Experience

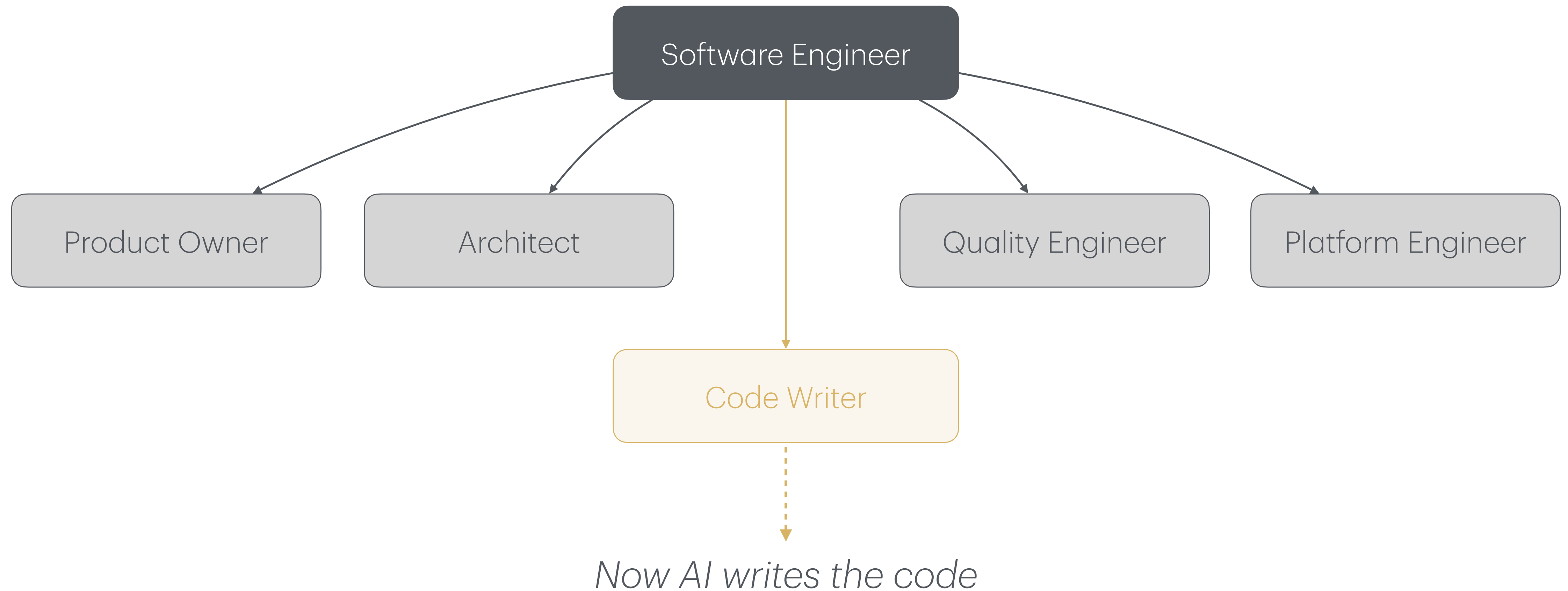


*I was given latitude. I got to try things that scared me.
That's where self-efficacy comes from.*

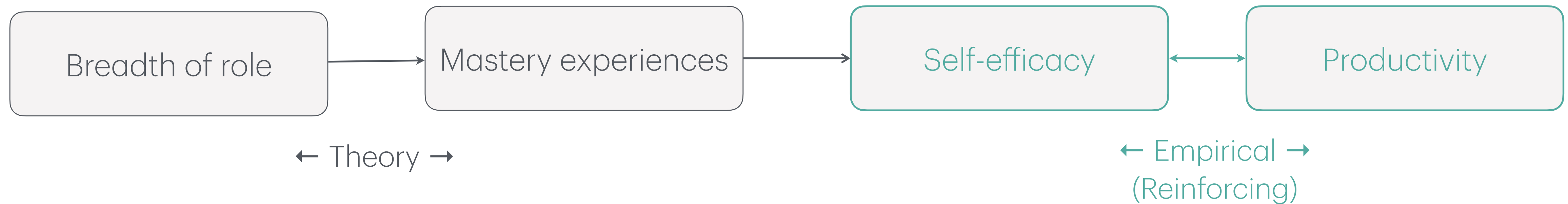
AI amplifies what's
already there.

The narrower the foundation,
the less there is to amplify.

The Specialisation Trap



The Connection



What does your system allow?

What if leaders
are atomised too?

If you've never seen a broader role,
can you imagine one?

Uneven Returns. Now We Know Why.

Job is to solve whole problems
Broad experiences
Higher self-efficacy shifts
More for AI to amplify

Superpower

Job is to write code
Narrow experiences
Lower self-efficacy shifts
Less for AI to amplify

Threat

Systems can be redesigned.

Start Here

- 1 Understand what your system actually permits
- 2 Widen the role before you add more tools
- 3 Build the conditions for mastery experiences
- 4 Don't mistake assisted capability for the real thing
- 5 Watch self-efficacy, not just productivity

What I Need Help With

Who has successfully de-atomised engineering roles?

How do you build genuine mastery experience in an AI-augmented world?

How do we help engineers navigate an identity shift, not just a skill shift?

Thank you

annievella.com

