

The Great Company Adventures · Book 46 of 50

INTEL **THE FIRST THINKING CHIP**

seven doors, twelve mental models, and the fleck of sand that learned to follow orders.

"Discovering the businesses that built the modern world"

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THE GREAT COMPANY ADVENTURES

Discovering the businesses that built the modern world.

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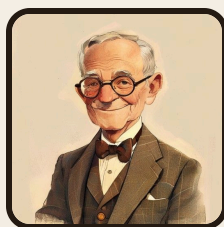
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MEET THE CHARACTERS



SIRI



BEN



WARREN



CHARLIE



IRIS

A curious girl named Siri, a wise old teacher named Ben, and his student Warren with Warren's partner Charlie — together discovering the businesses that built the modern world, one adventure at a time.

THE GLOBAL 50

One great company per volume · Fifty adventures, one modern world

SPACE & EXPLORATION

1. SpaceX — *“The Fire That Comes Back”*

MANUFACTURING & ENGINEERING

2. Toyota — *“The River That Builds Cars”*
3. Siemens — *“The Factory That Builds Factories”*
4. Caterpillar — *“The Machines That Move Mountains”*
5. Boeing — *“The Bird With Six Million Pieces”*
6. Airbus — *“The Plane Four Countries Built”*

ENERGY & INDUSTRY

7. Shell — *“The Sunlight Buried at Sea”*
8. ExxonMobil — *“The Ancient Sunlight Machine”*
9. GE Vernova — *“The Wheel That Makes Lightning”*

COMMUNICATION

10. AT&T — *“The Voice Inside the Wire”*
11. Qualcomm — *“The Whisper in the Air”*
12. Ericsson — *“The Towers That Talk”*

TRANSPORTATION

13. Tesla — *“The Car With No Engine”*
14. John Deere — *“The Machine That Feeds the World”*
15. UPS — *“The Promise in a Brown Truck”*

INFRASTRUCTURE

16. ABB — *“The Arms That Never Tire”*
17. Schneider Electric — *“The Guardian of the Grid”*

MATERIALS

18. Corning — *“The Thread of Light”*
19. DuPont — *“The Inventors of Almost Everything”*

SCIENCE & TOOLS

20. 3M — *“The Factory of Ten Thousand Ideas”*
21. Bosch — *“The Spark in Every Machine”*
22. Honeywell — *“The Dial That Tames the Weather”*

MEDICINE & BIOTECHNOLOGY

23. Pfizer — *“The Shield in a Tiny Vial”*
24. Roche — *“The Detectives of the Blood”*

25. Novo Nordisk — *“The Key to a Billion Locks”*

26. Johnson & Johnson — *“The Little Bandage That Grew”*

FOOD & AGRICULTURE

27. Nestlé — *“The Cup That Wakes the World”*
28. Cargill — *“The Invisible Harvest”*

FINANCE & COMMERCE

29. Visa — *“The Handshake Inside the Card”*
30. Mastercard — *“The Two-Second Trust Machine”*
31. Walmart — *“The Store That Never Runs Out”*
32. Costco — *“The Treasure Warehouse”*
33. FedEx — *“The Race Against the Sun”*

CONSUMER INNOVATION

34. Disney — *“The Factory of Dreams”*
35. LEGO — *“The Brick That Builds Anything”*
36. Sony — *“The Pocket Full of Music”*
37. Coca-Cola — *“The Secret in the Red Can”*
38. Nike — *“The Shoe That Learned to Fly”*

LUXURY & CRAFTSMANSHIP

39. Rolex — *“The Heartbeat on Your Wrist”*
40. LVMH — *“The Suitcase That Conquered the World”*

COMPUTING & DIGITAL CIVILIZATION

41. Apple — *“The Glass That Thinks”*
42. Microsoft — *“The Invisible Machine”*
43. Google — *“The Library With No Walls”*
44. Amazon — *“The Box That Crossed the World”*
45. NVIDIA — *“The Brain Made of Sand”*
46. Intel — *“The First Thinking Chip”*
47. TSMC — *“The Invisible City”*
48. ASML — *“The Machine That Prints With Light”*
49. OpenAI — *“The Machine That Learned to Talk”*

THE FINAL DISCOVERY

50. The Company Yet to Be Built — *“The Adventure You Will Build”*

THE LITTLE SQUARE IN THE SHOEBOX

Midnight. Homework: not happening. Because Grandpa Ben's brass compass just started... trembling.

TIK-TIK



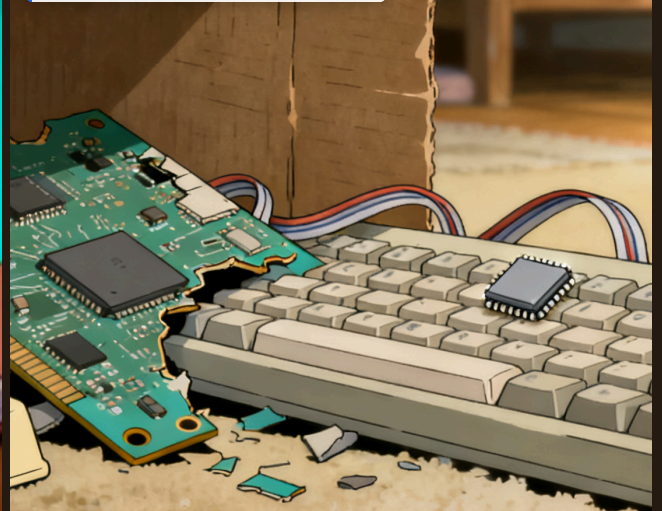
It's never done THIS before.

It spun. Locked. Pointing straight down at the floor.

SPIN



The shoebox of dead gadgets. Out tumbled one grey square with silver legs, no bigger than a stamp.



This? It's a dead BUG!

Iris would show her later: the same little squares hid in the thermostat, the car, the doorbell, the watch.



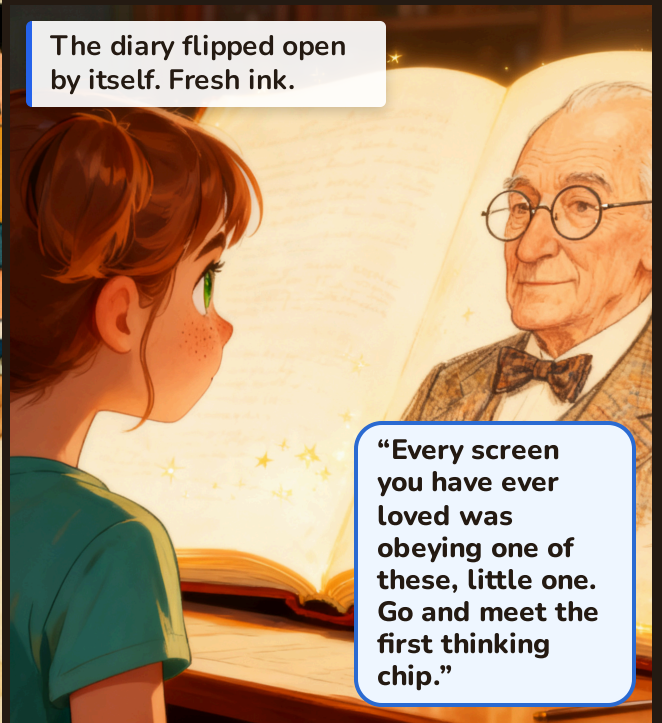
They're EVERYWHERE in my house?!

On her notebook it looked like nothing at all. Lighter than a coin. Colder than a spoon.



You can't do anything. You're a chip!

The diary flipped open by itself. Fresh ink.



"Every screen you have ever loved was obeying one of these, little one. Go and meet the first thinking chip."

★ WORTH REMEMBERING

This square is a **microprocessor** — an entire computer on a fleck of silicon. Before it, one computer filled a room and cost as much as a house. And silicon is just **sand**.

The silver legs sparked — and a whirlpool of blue light yanked her in.

WHOOSH



Here we GOOO!

SIRI'S SECRET NOTEBOOK

Biggest mystery yet ☐

- ① How does a flake of SAND obey orders — billions a second?
- ② Grandpa says this square shrank a whole room into my pocket. Prove it, compass.

THE CITY TOO SMALL TO SEE

She landed in a lab where the chip hung magnified in the air. And it was not a square. It was a CITY.



There are **STREETS** in here!

An engineer stepped out of the glow. *"I'm Iris. I help design the cities inside chips."*

Best. Job. EVER.

Under the microscope: copper avenues, blocks of identical towers, sparks racing like traffic.

Who **LIVES** here?

Switches. Billions of them.

★ WORTH REMEMBERING

A modern processor packs **billions of switches** into less space than your fingernail. Each is thinner than a virus. Laid end to end, one chip's wiring would stretch for miles.

Iris unrolled a parchment map. Seven glowing doors. *“Open them all and you’ll understand this square better than most grown-ups.”*



Seven doors. Deal.



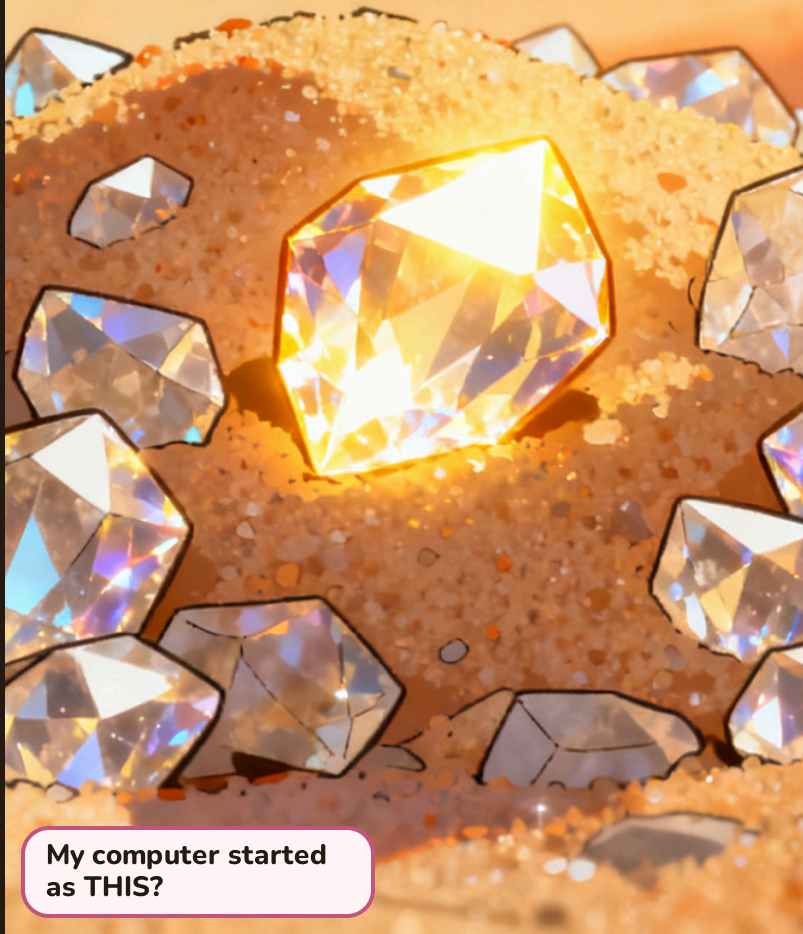
SIRI'S SECRET NOTEBOOK • THE QUEST MAP

- 1 THE ROCK — how is sand made perfect?
- 2 THE SWITCH — a gate with no moving parts?!
- 3 THE RULES — how do switches decide?
- 4 THE DRUM — who keeps time?
- 5 THE PRINTING — you print with LIGHT?
- 6 THE TEST — why do some chips fail?
- 7 THE ORDERS — who tells it what to do...
and WHO builds it? 🌐

THE PUREST MOUNTAIN ON EARTH

3a Door One: sand, grown perfect

Door one opened onto a quarry. Iris scooped up quartz sand. Up close: rough little diamonds.



My computer started as THIS?

Into the furnace, then chemistry, then furnace again. Out came silicon, cleaner than anything in nature.

1,400°C



Sand **MELTS?!**

"For a chip, silicon must be 99.9999999% pure. Nine nines."



How pure IS that?

A sugar mountain — with one spoon of anything else.

★ WORTH REMEMBERING

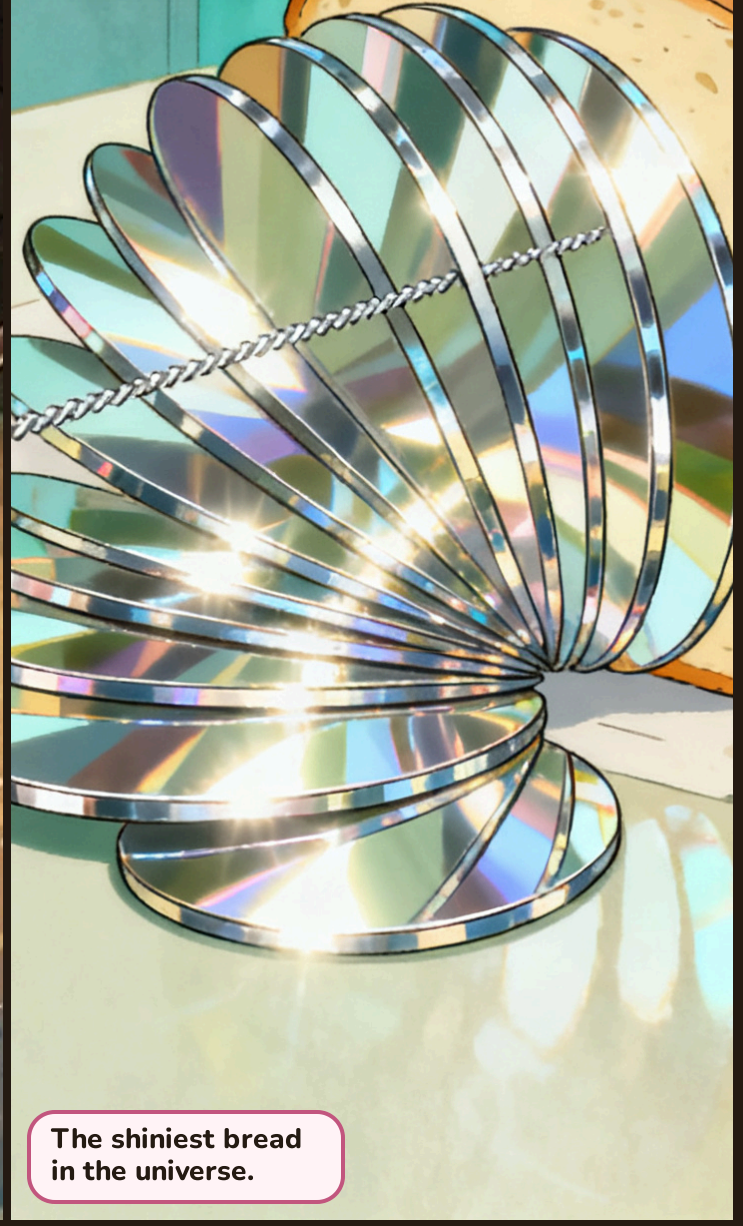
Why so fussy? Electricity must flow in **perfect silence**, and one stray atom is a boulder in a stream. Nine-nines purity exists nowhere in nature — only where people decided to be unreasonably careful.

A seed crystal kissed the molten pool — and the liquid followed it upward, copying one perfect pattern.



It's growing like a backwards icicle!

A diamond wire sliced the crystal into mirror discs, polished until the biggest bump was smaller than a virus.



The shiniest bread in the universe.

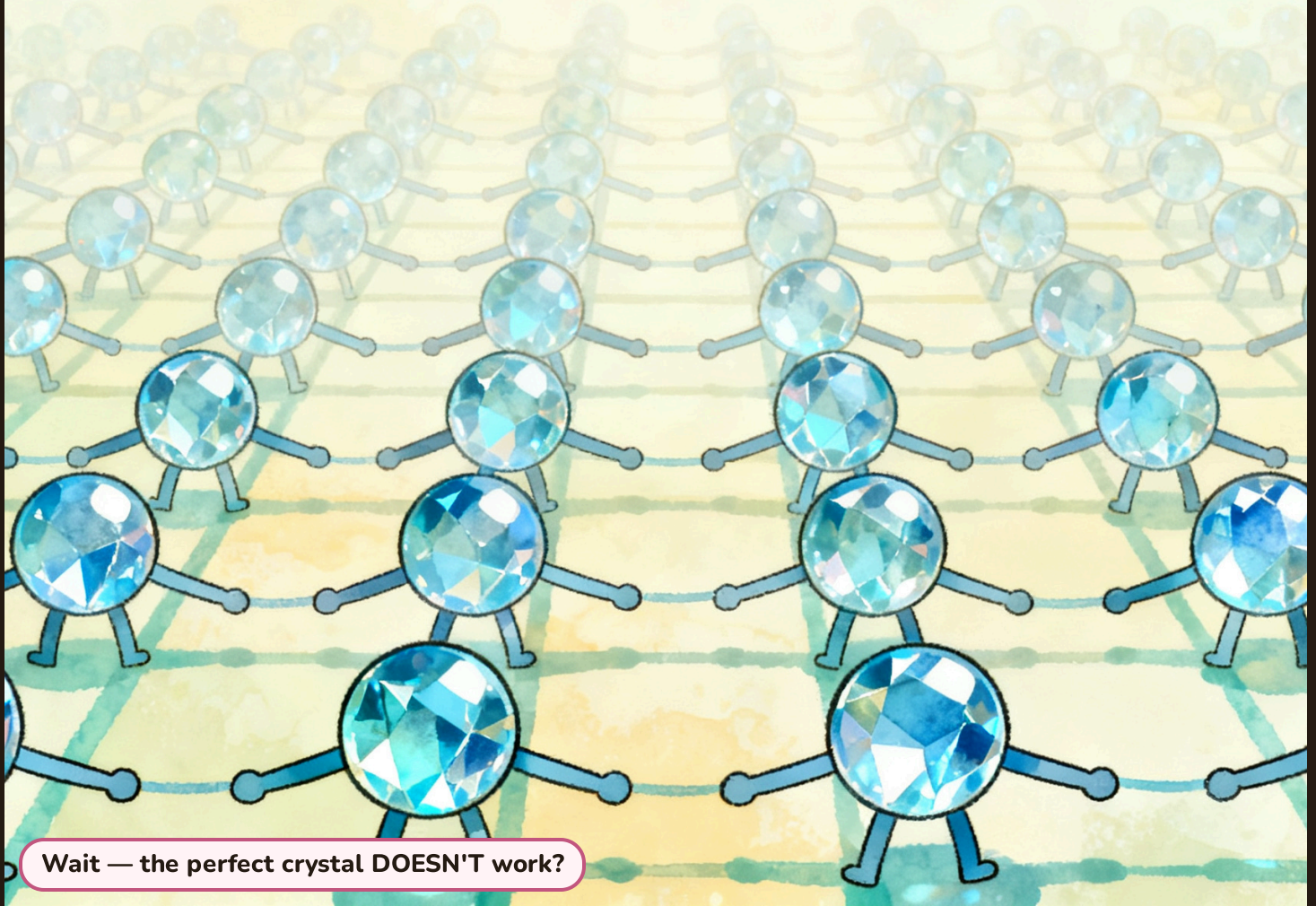
 SIRI'S SECRET NOTEBOOK · DOOR 1 UNLOCKED

Quartz → furnace → nine-nines silicon → ONE giant crystal → mirror wafers. Purity = sugar mountain, one spoon. Flatness so extreme it makes glass look lumpy. 🪨✨

SPOILING IT ON PURPOSE

4a Door Two: the surprise

Door two was silent. Rows of atoms in perfect parade. And perfectly useless.

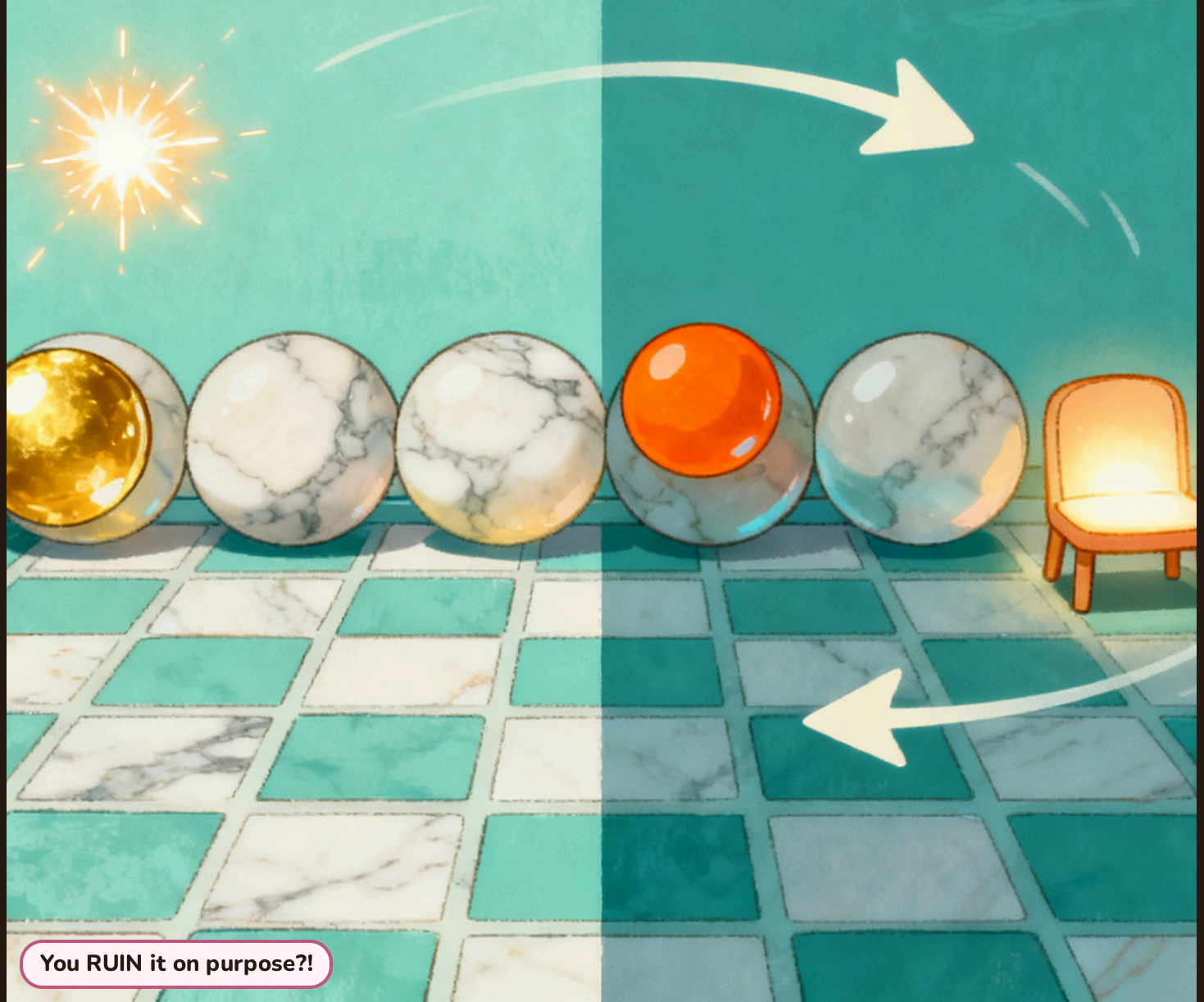


Wait — the perfect crystal DOESN'T work?

★ WORTH REMEMBERING

Pure silicon barely conducts electricity at all. It is a **semiconductor**: not a wire, not an insulator, but something in between — and 'in between' is exactly what you need to build a switch.

"So we spoil it. A pinch of one element brings spare sparks. A pinch of another leaves empty seats."



You RUIN it on purpose?!

★ WORTH REMEMBERING

This is **doping**. Put the spare-spark side against the empty-seat side and current will cross one way far more easily than the other. Silicon has just learned its first rule.

"Add a lever above the road. Put a small charge on it and the road opens. Take it away and the road shuts."



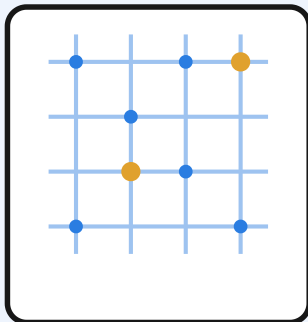
A gate opened by ELECTRICITY!

★ WORTH REMEMBERING

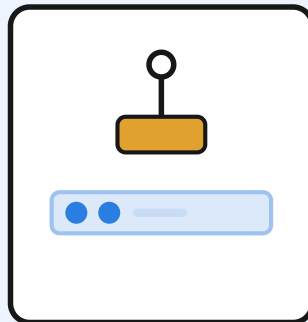
That is a **transistor** — a switch with no moving parts, flipped by the same electricity it controls. Because switches can flip other switches, they can be wired into machines that reason. That single fact built the modern world.



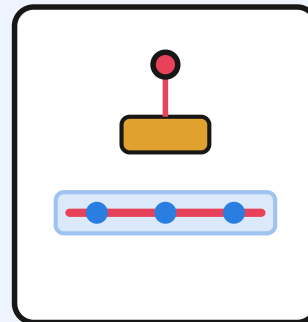
HOW ONE SWITCH OBEYS



DOPED SAND
a pinch of other atoms



LEVER UP: SHUT
no sparks may cross



LEVER ON: OPEN
now the sparks flow

Iris held a wafer flat on her palms. Siri saw her own face in it — over hundreds of sleeping cities.



Hundreds of chips on ONE plate.

 SIRI'S SECRET NOTEBOOK · DOOR 2 UNLOCKED

Pure crystal = useless. Add a PINCH of other atoms = spare sparks + empty seats = rules. Add a lever on top = a switch with NO moving parts. Nothing wiggles. Everything obeys. ⚡

HOW SWITCHES LEARN TO DECIDE

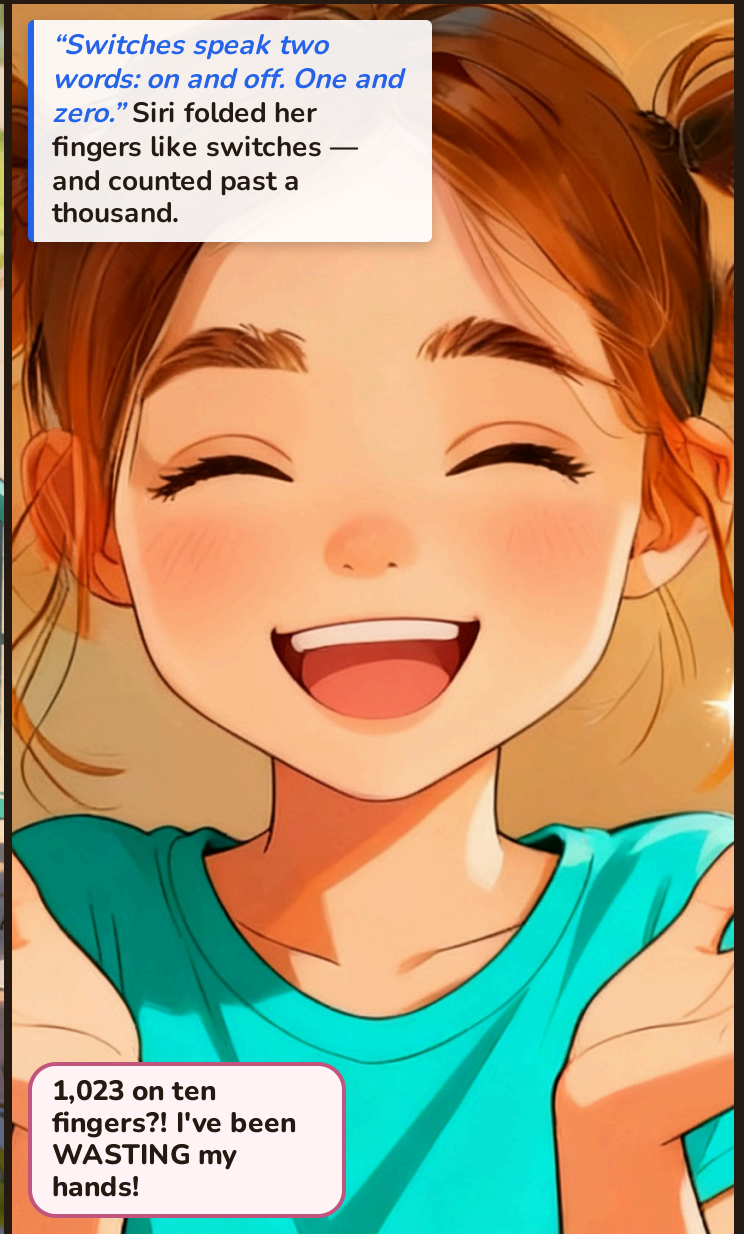
5a Door Three: two gates make a rule

"Two gates in a row: the spark crosses only if BOTH open. Side by side: EITHER will do."



Two dumb gates...
make a RULE!

"Switches speak two words: on and off. One and zero." Siri folded her fingers like switches — and counted past a thousand.

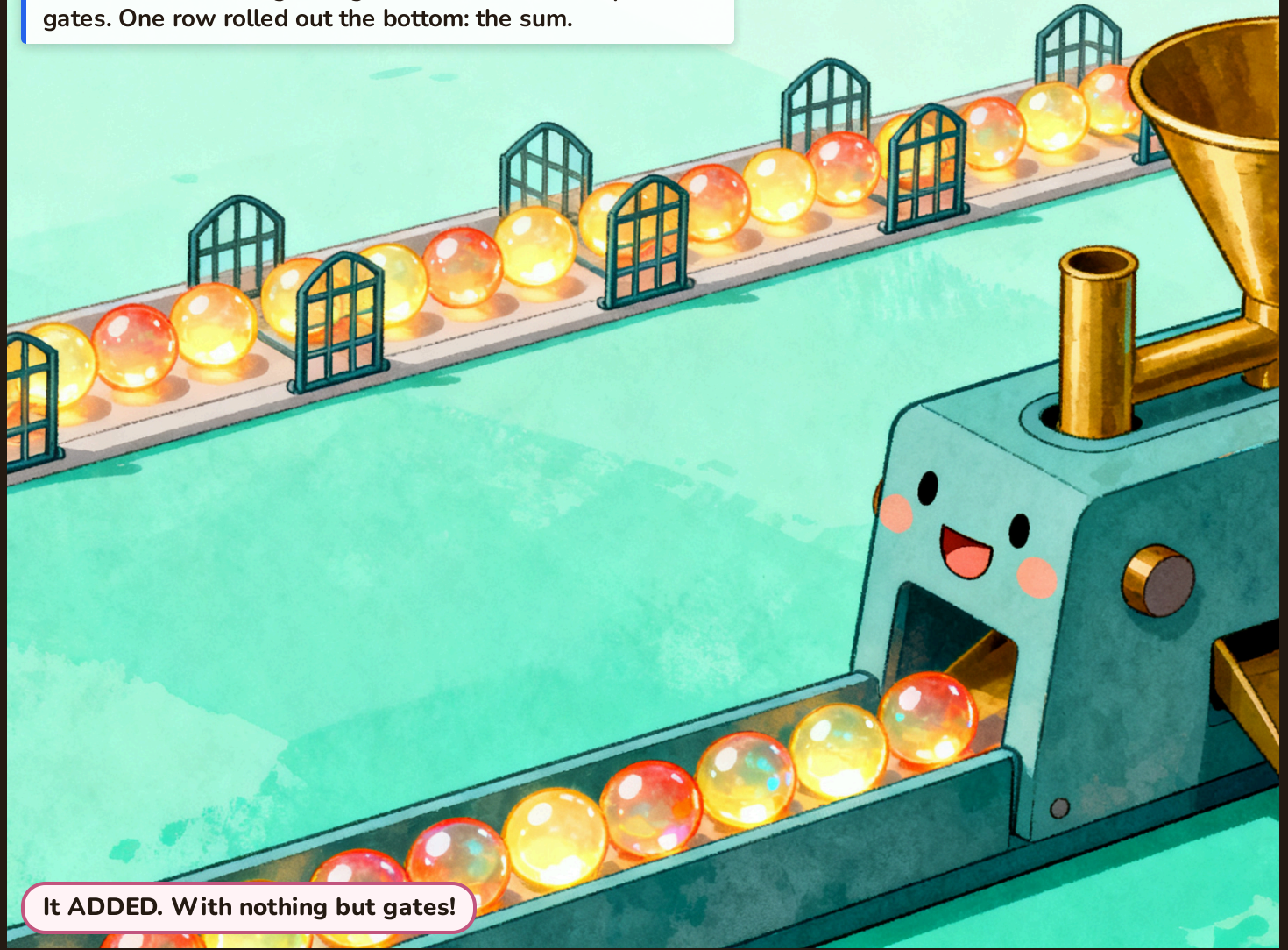


1,023 on ten
fingers?! I've been
WASTING my
hands!

★ WORTH REMEMBERING

Two words are enough for everything, because **numbers can carry meaning**. The same pattern of ons and offs can be a number, a letter, a note or a pixel — it all depends on which switches are asked to read it.

Iris fed two rows of glowing marbles into a contraption of gates. One row rolled out the bottom: the sum.



It ADDED. With nothing but gates!

★ WORTH REMEMBERING

Chain a few hundred gates and you get an **adder**. Chain adders and you get multiplying, comparing, choosing. Every game, song and photo you love is built out of that pile of yes-and-no. 🧠

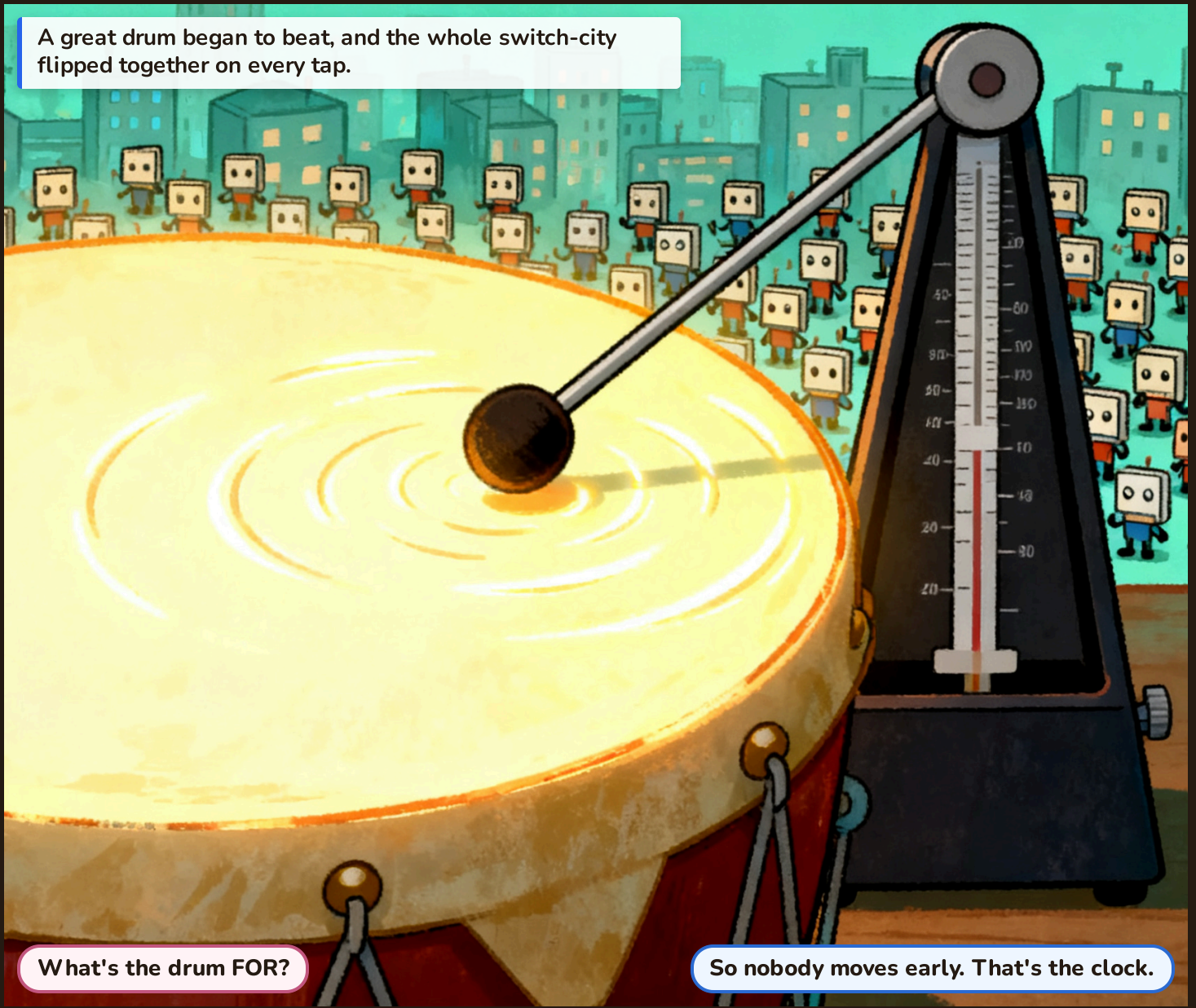
📖 SIRI'S SECRET NOTEBOOK · DOOR 3 UNLOCKED

Gates in rows = rules (BOTH / EITHER / NOT). On+off = numbers = letters = pixels = everything. A few hundred gates can ADD. Computers are just extremely organised yes and no. ✌️

THE DRUM AND THE SHELVES

6a Door Four: who keeps time?

A great drum began to beat, and the whole switch-city flipped together on every tap.



What's the drum FOR?

So nobody moves early. That's the clock.

★ WORTH REMEMBERING

The **clock** beats billions of times a second, and every switch must settle before the next tap. That is why chips are rated in gigahertz: it is the drumbeat, not the cleverness, being counted.

"And a brain needs pockets." A drawer at arm's reach. A shelf a step away. An archive hall far behind.



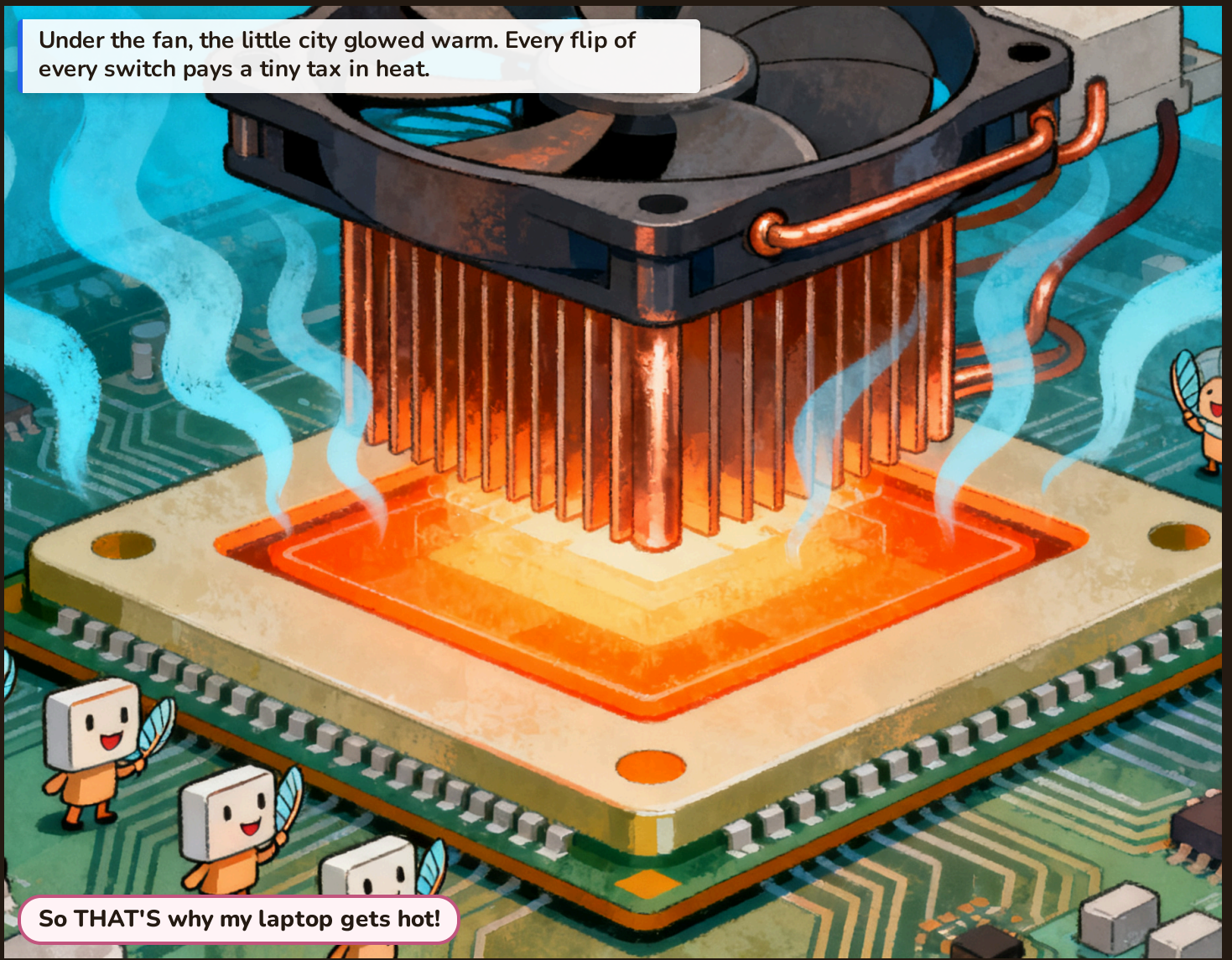
Why not keep EVERYTHING close?

Close is tiny. Far is huge. Pick both.

★ WORTH REMEMBERING

Registers, then **cache**, then main memory: each layer is bigger and slower than the one before. Half of chip design is guessing what you will want next and having it already in the drawer.

Under the fan, the little city glowed warm. Every flip of every switch pays a tiny tax in heat.



So THAT'S why my laptop gets hot!

★ WORTH REMEMBERING

Every switch flip leaks a whisper of heat, and billions of whispers become a furnace. Heat is the real ceiling on speed — which is why one clever chip eventually became several chips working side by side. 🔥

📖 SIRI'S SECRET NOTEBOOK · DOORS 4 UNLOCKED

Clock = drumbeat, billions/sec, nobody moves early. Memory = drawer → shelf → archive hall (small+fast vs big+slow). Every flip costs HEAT. Heat is the boss of everything. 🥁🔥

PRINTING CITIES WITH LIGHT

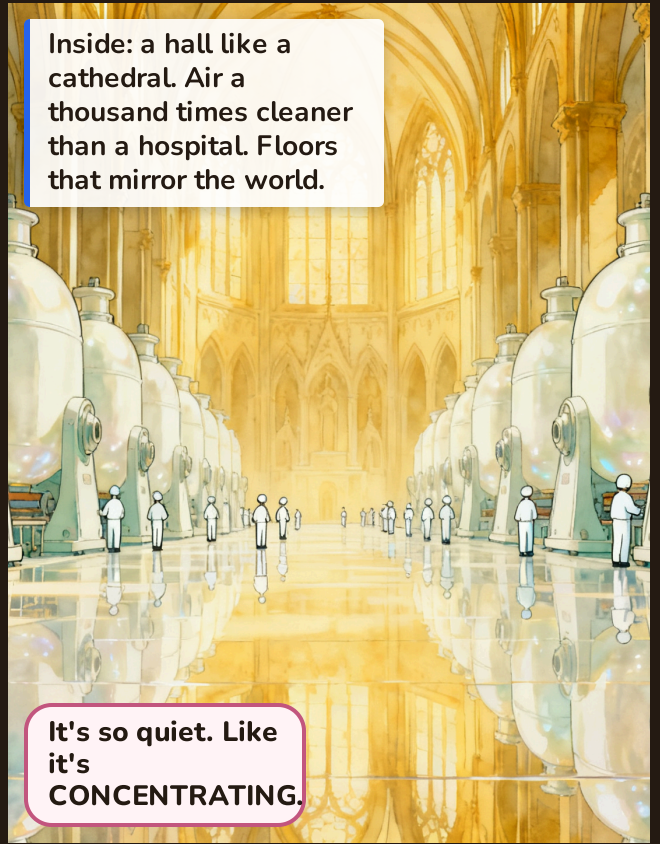
Door five needed full bunny suits and a whooshing air shower. *"Here one dust speck is a falling mountain."*

WHOOOSH



I'm a very clean marshmallow.

Inside: a hall like a cathedral. Air a thousand times cleaner than a hospital. Floors that mirror the world.



It's so quiet. Like it's **CONCENTRATING.**

*"You cannot carve something this small. So you don't carve. You **PRINT** — light through a stencil."*



The light **IS** the chisel!



The real machine: bus-sized, firing light through lenses that shrink a huge drawing smaller... and smaller.

Draw the city BIG, then shrink it TINY!

"For the finest lines we make our own light: a droplet of tin, struck by a laser, bursting into a violet star."

You built a STORM to print a BRAIN.

Print. Bake. Etch. Wash. Repeat — dozens of layers, about three months per wafer.

THREE MONTHS for one plate?!

And no speck of dust may land. Ever.



★ WORTH REMEMBERING

This is **photolithography**. Nothing mechanical ever touches the pattern — only light, chemistry and vacuum. A factory that can do it costs more than an airport, which is a wall we will talk about later. 🧐

📖 SIRI'S SECRET NOTEBOOK · DOOR 5 UNLOCKED

Don't carve the invisible — PRINT it. Violet light from exploding tin droplets, shrunk through giant lenses, layer after layer for 3 months. A 100-storey city no eye will ever see. 🌌

THE TEST THAT NEVER BLINKS

8a Door Six: why some cities fail

Golden needles touched each square in turn and asked it thousands of questions. Green. Green. Red.

"One speck in the wrong street, one atom out of place — and that little city never wakes up."

You TEST every single one?

Every one. Perfection isn't a wish.

A whole city, killed by DUST!

★ WORTH REMEMBERING

The share of chips that work is called **yield**, and it is the quiet heart of the whole business. Two factories can run the same recipe and one earns twice as much, simply because more of its cities wake up.

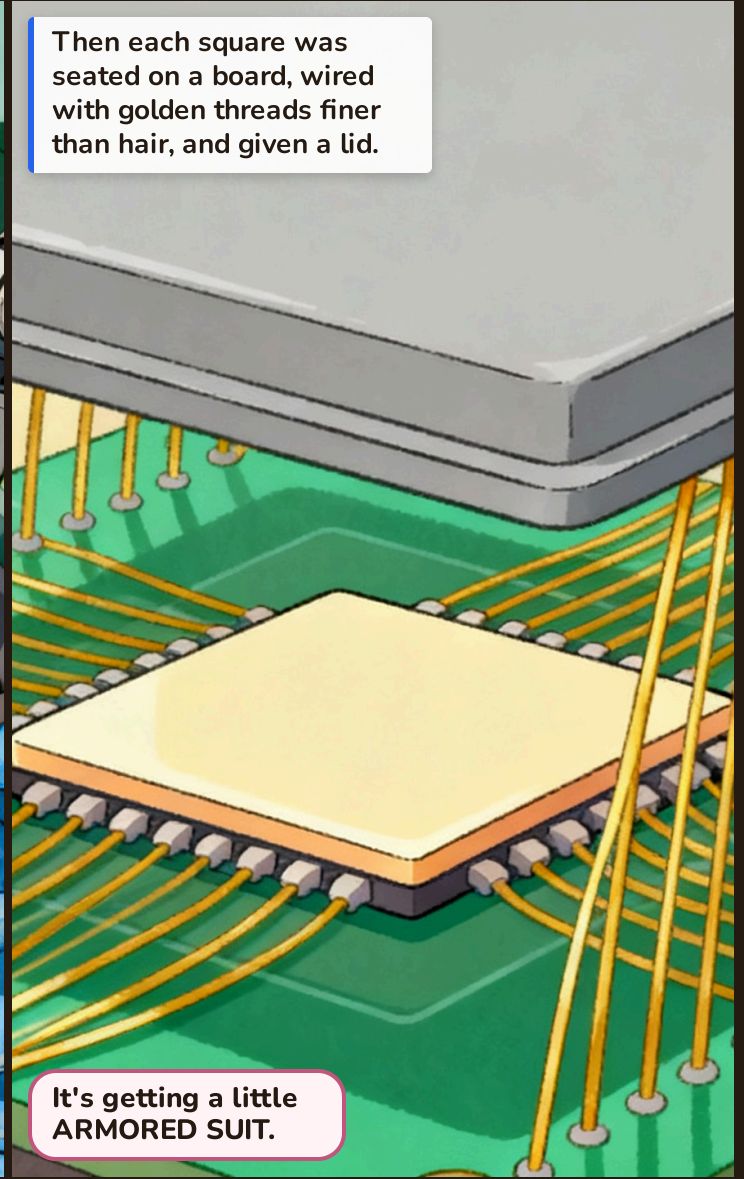
Survivors were sorted by talent: the fastest one way, the steady ones another, the sleepy ones a third.



Same chip,
different SPEEDS?

Same recipe.
Different luck.

Then each square was seated on a board, wired with golden threads finer than hair, and given a lid.



It's getting a little
ARMORED SUIT.

★ WORTH REMEMBERING

Packaging is not just a lid: it carries power in, heat out, and thousands of signals across. Increasingly, several small chips are packaged together as one — a trick that matters more every year.

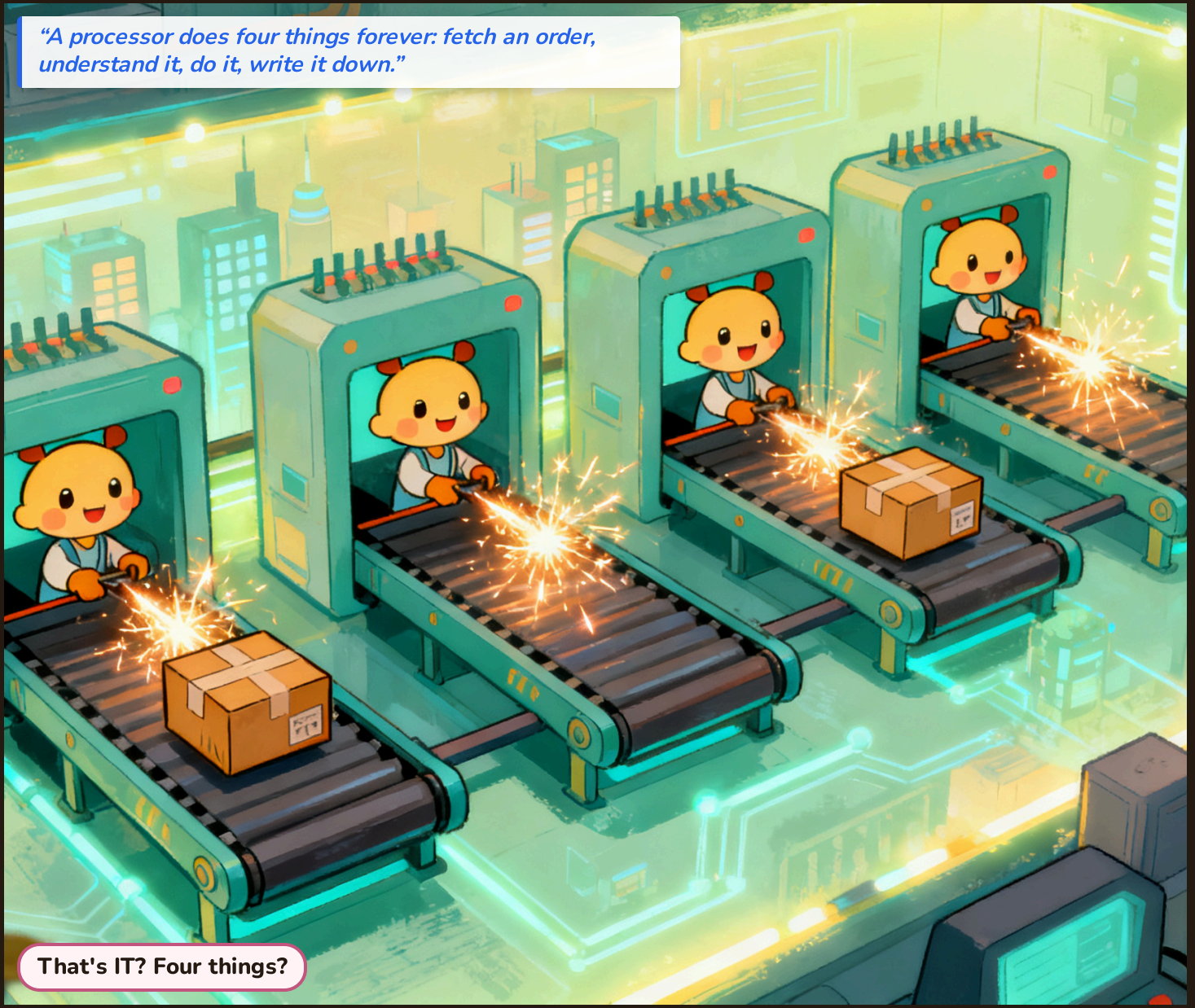
📖 SIRI'S SECRET NOTEBOOK • DOOR 6 UNLOCKED

Every chip tested by golden needles. Dust kills cities. YIELD = how many wake up = who makes money. Then sorted by speed and dressed in a lid with golden wires. ✍️

THE ORDERS

9a Door Seven, part one: what does it actually DO?

"A processor does four things forever: fetch an order, understand it, do it, write it down."



That's IT? Four things?

★ WORTH REMEMBERING

Fetch, decode, execute, store — repeated billions of times a second. And it runs like an assembly line: while one order is being written down, the next is already being fetched. Nobody waits.

A scroll of simple picture-instructions unrolled across the floor. A little robot followed it, step by step.

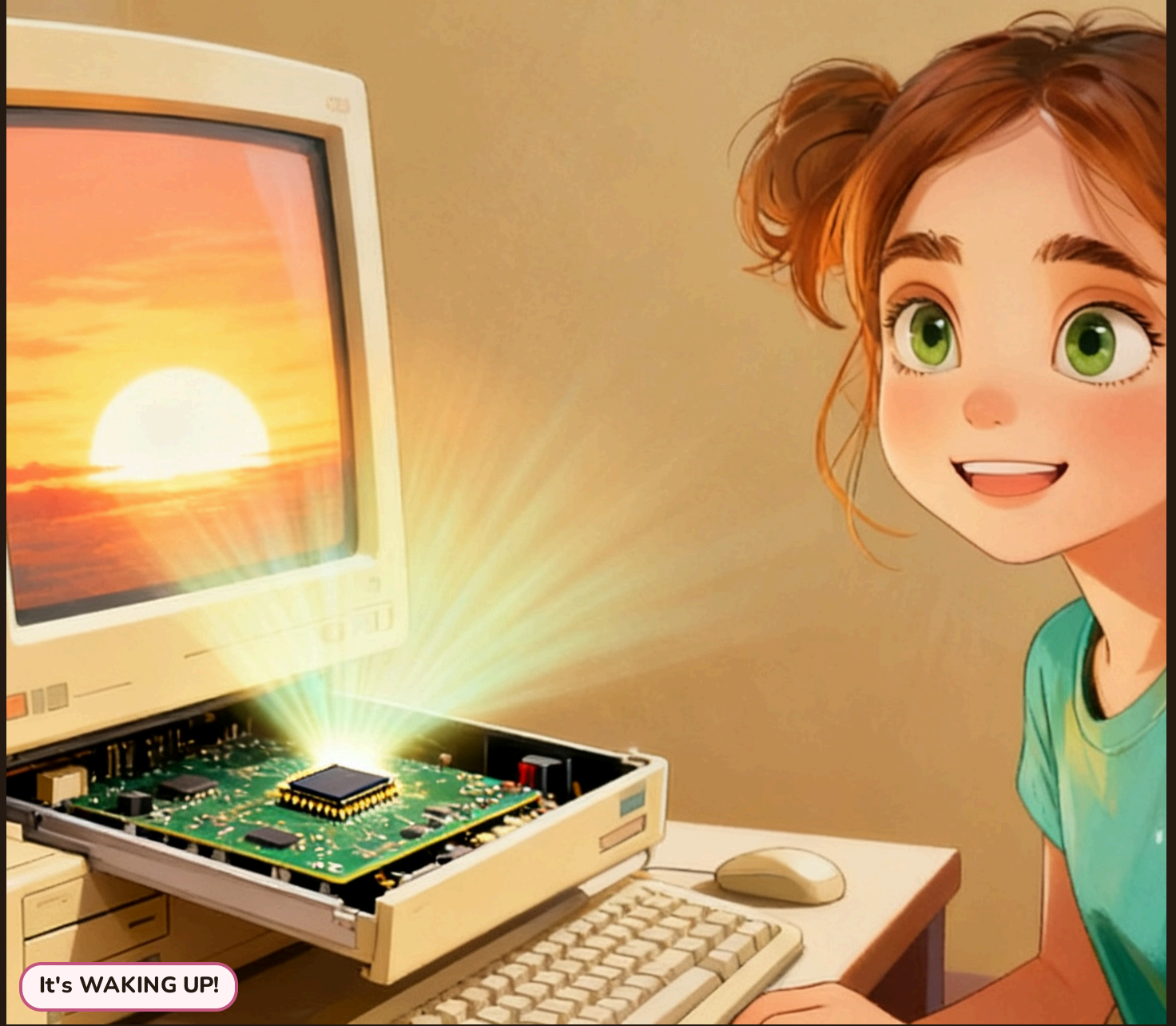


Software is just a very LONG list!

★ WORTH REMEMBERING

A chip understands only a short list of simple orders — add, compare, jump, remember. Every app is those orders stacked millions deep. Programs are not spells; they are extremely patient **to-do lists**.

Siri pressed a power button. Light spread from the chip out to the screen like sunrise filling a valley.



It's WAKING UP!

 SIRI'S SECRET NOTEBOOK · DOOR 7, PART ONE

Fetch → understand → do → write down. On an assembly line. Forever. The chip knows only tiny orders; the magic is HOW MANY. Programs = to-do lists for a very fast beach. 📝

THE GREAT DOUBLING

Iris drew a staircase into the sky. Each step: twice as many switches as the one below.



How long has this been going ON?

★ WORTH REMEMBERING

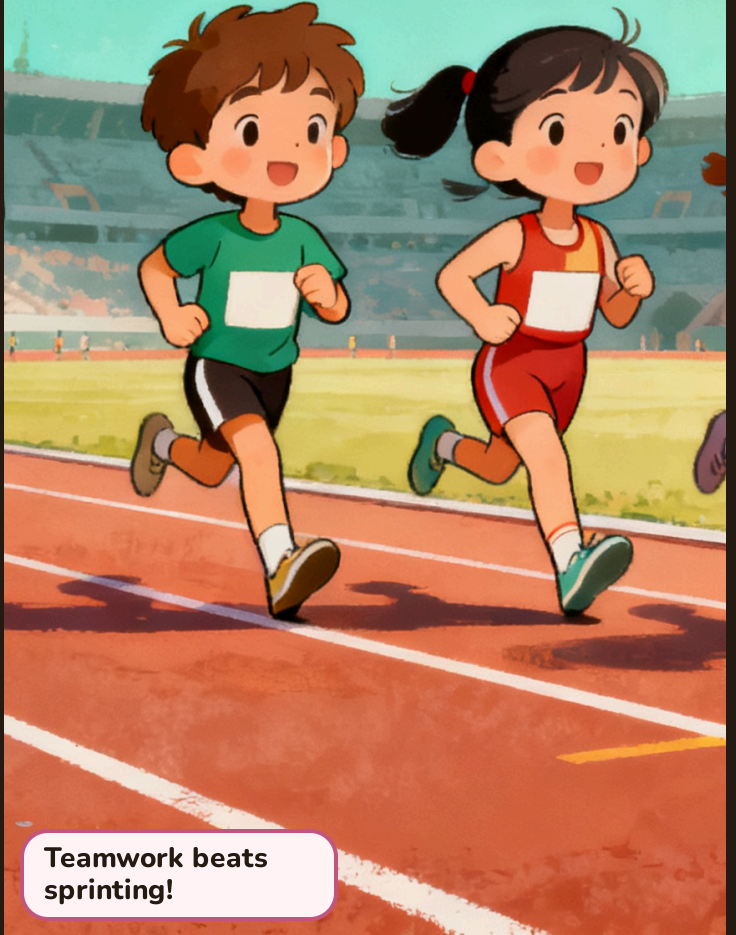
In 1965 Gordon Moore noticed that the number of switches on a chip was doubling roughly every year or two, and predicted it would continue. That guess, later called **Moore's Law**, shaped the industry for sixty years.

"Smaller switches are cheaper, faster AND use less power. For decades, shrinking gave us everything at once."



So they just kept **SHRINKING?**

"Until heat said stop. So instead of one exhausted runner, chips got several runners side by side."



Teamwork beats sprinting!

★ WORTH REMEMBERING

Moore's Law was never a law of physics — it was a **promise the industry kept** by spending unbelievable money, decade after decade. Each doubling got harder and more expensive than the last.

📖 SIRI'S SECRET NOTEBOOK

1965: Moore predicts switches double every year or two. Shrinking = cheaper + faster + cooler, all at once. Then HEAT said no → many cores. It was never physics. It was stubbornness with a budget. ✓

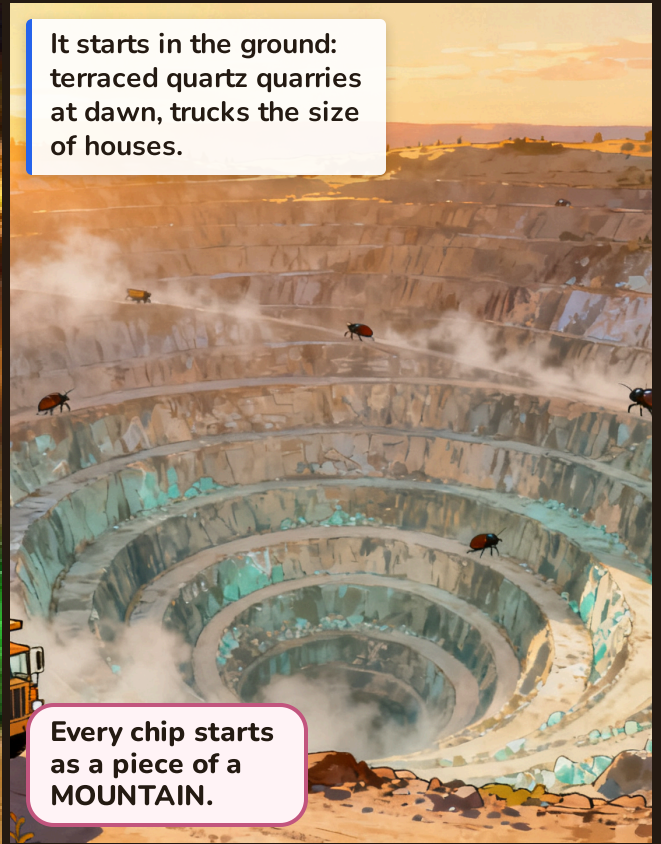
A MILLION HANDS

The last part of door seven filled the wall. Behind it: no machine at all. Just the world.



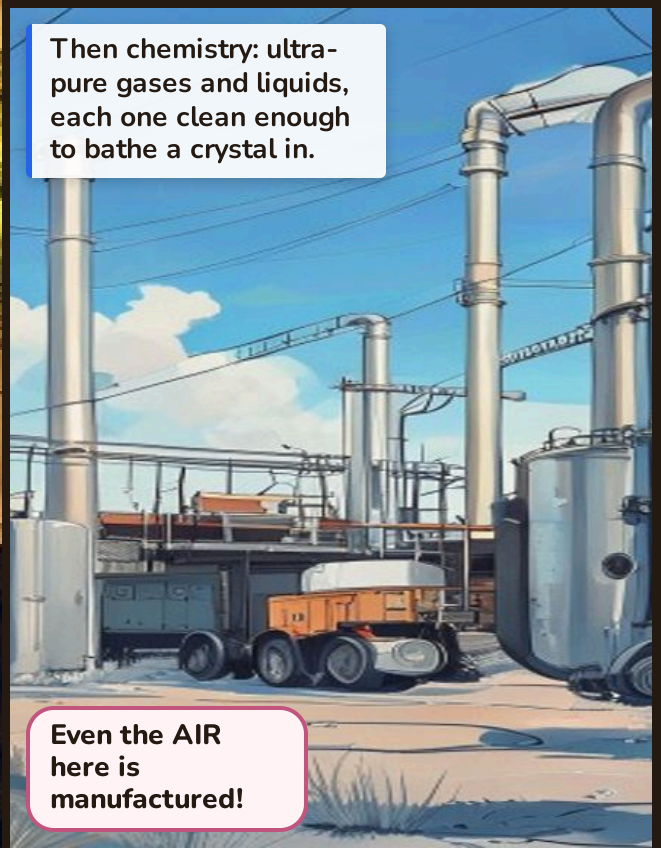
The last secret is
PEOPLE?

It starts in the ground:
terraced quartz quarries
at dawn, trucks the size
of houses.



Every chip starts
as a piece of a
MOUNTAIN.

Then chemistry: ultra-
pure gases and liquids,
each one clean enough
to bathe a crystal in.



Even the AIR
here is
manufactured!

Then the printing machines — each one built from a hundred thousand parts by companies on three continents.



Nobody builds it alone?

Nobody. Not even close.

The miner. The chemist. The mirror polisher. The technician. The driver. The tester. Each said the same shy line.



"I only do my small part."

★ WORTH REMEMBERING

Sit with that: **nobody on Earth knows how to make a chip.** Each person masters one sliver, and a great company conducts a million slivers into one object. The conducting, not the parts, is the real invention. 🎵

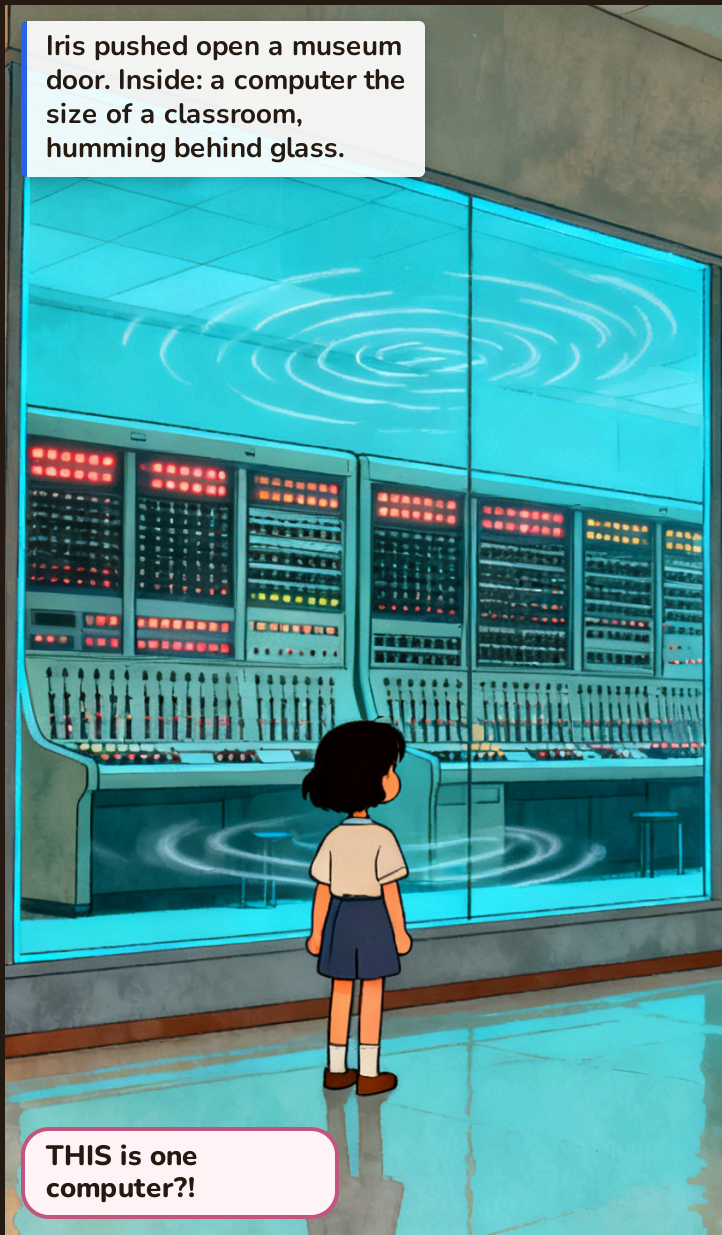
📖 SIRI'S SECRET NOTEBOOK · DOOR 7, PART TWO

Mountain → pure gases → giant printing machines from three continents → a million hands → one stamp-sized city. No single person knows the recipe. So WHO'S THE CONDUCTOR? ...I think I'm about to find out. 🗺️

THE WORLD BEFORE THE SQUARE

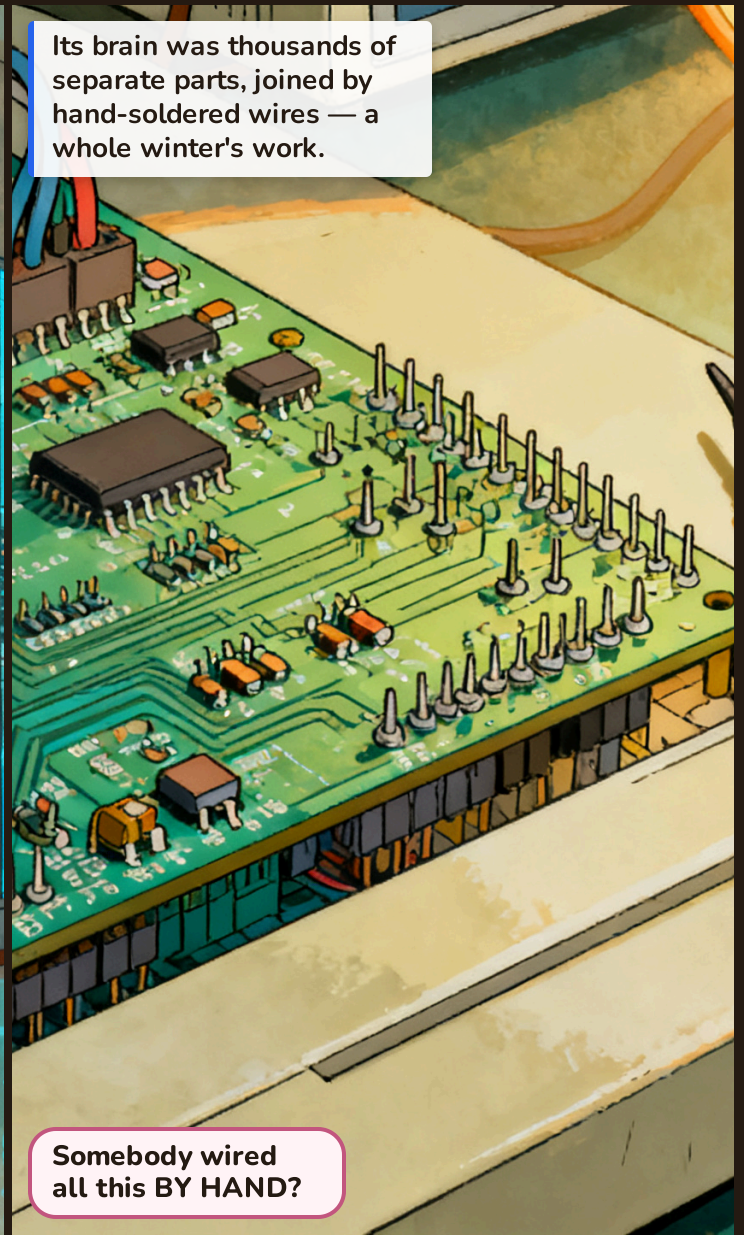
12a Siri's question Flips

Iris pushed open a museum door. Inside: a computer the size of a classroom, humming behind glass.



THIS is one computer?!

Its brain was thousands of separate parts, joined by hand-soldered wires — a whole winter's work.



Somebody wired all this BY HAND?

★ WORTH REMEMBERING

Early computers were built from separate components soldered together one at a time. Every joint could fail, and there were tens of thousands of them. Reliability, not cleverness, was the real enemy.

Then a small workshop asked a hard question: could one chip run a whole desk calculator?



"Instead of a chip for calculators and another for tills, build ONE chip — and change its orders."



Why not build a chip that's... GENERAL?

One brain. Different to-do lists!



★ WORTH REMEMBERING

That was the leap: a **general-purpose chip**. Don't rebuild the machine for each job — write a new list of orders. One product could suddenly serve a thousand customers who each wanted something different.

📖 SIRI'S SECRET NOTEBOOK

My question flipped: not 'how does it work' → 'why would anyone SPEND billions on it?' Before: classroom-sized computers, hand-soldered. Then: one general chip + a new to-do list = a thousand machines. 🔄

THE LANGUAGE EVERYONE LEARNED

A detailed illustration of a massive library. A wide, white spiral staircase with a metal railing winds through the center of the room. The walls are lined with floor-to-ceiling bookshelves, each filled with books. Warm, golden light emanates from the shelves, creating a cozy atmosphere. Two wooden ladders are positioned against the bookshelves on either side of the staircase.

Iris opened a hall of shelves. Every book: a program written for one family of chips.

An illustration of a river scene. On the left bank, a large pile of books is shown falling into the water, with bright light reflecting off the pages. In the foreground, a small wooden boat filled with stacked boxes is being rowed across the river. The background shows a hilly landscape under a sunset sky.

"If a new chip speaks a different language, every one of these must be rewritten. Nobody has time."

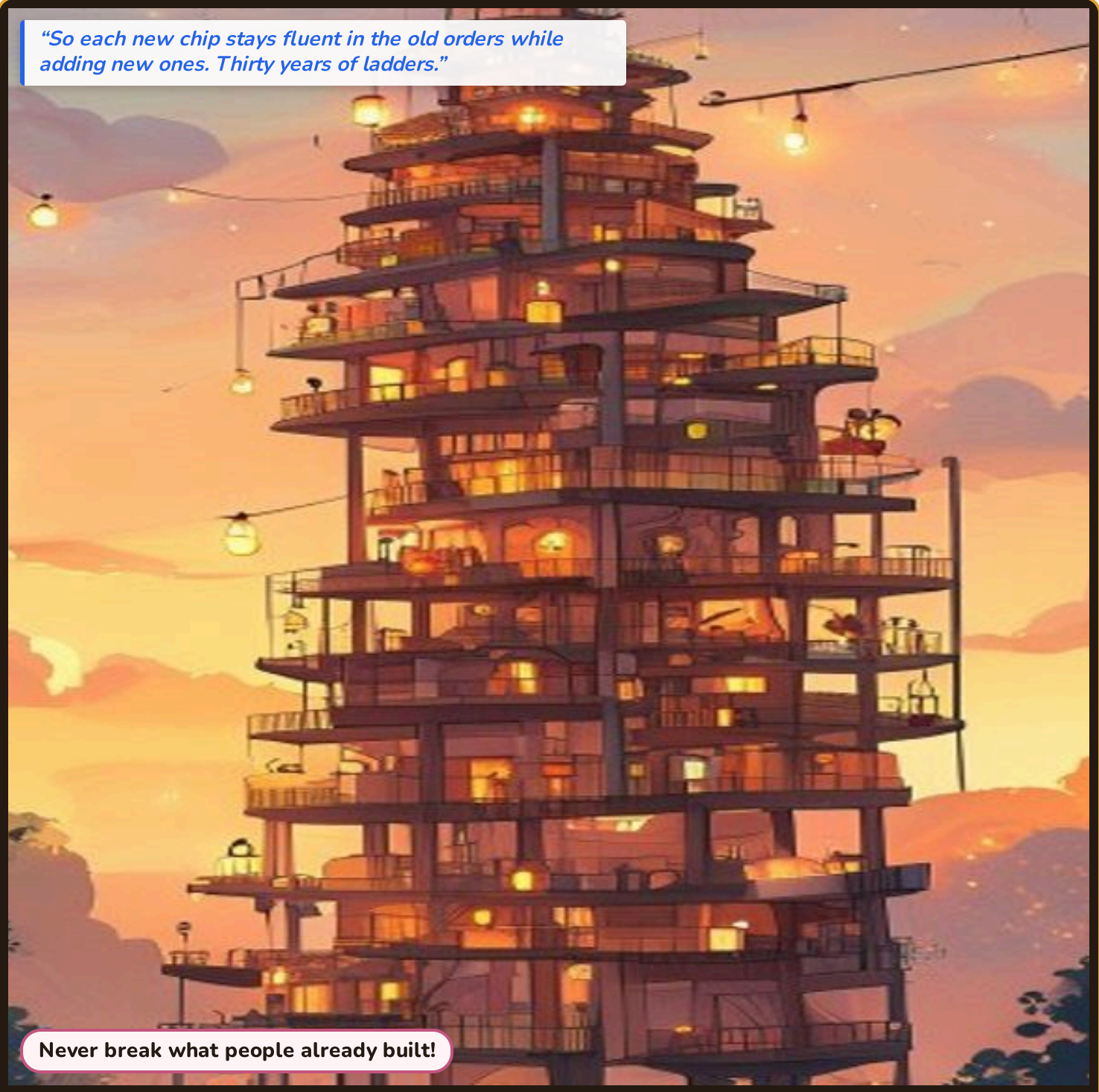
Millions of programs? For ONE family?

So the OLD language wins!

★ WORTH REMEMBERING

A chip's list of orders is called its **instruction set**. Once millions of programs speak it, that language becomes a place everyone already lives — and moving house is expensive for the whole world at once.

"So each new chip stays fluent in the old orders while adding new ones. Thirty years of ladders."



Never break what people already built!

★ WORTH REMEMBERING

Grown-ups call this **backwards compatibility**, and it is a wall made of other people's work. A rival can build a faster chip. Persuading a million programs to move is a different problem entirely.

In a bedroom somewhere, a kid's first program ran on a chip designed before she was born.



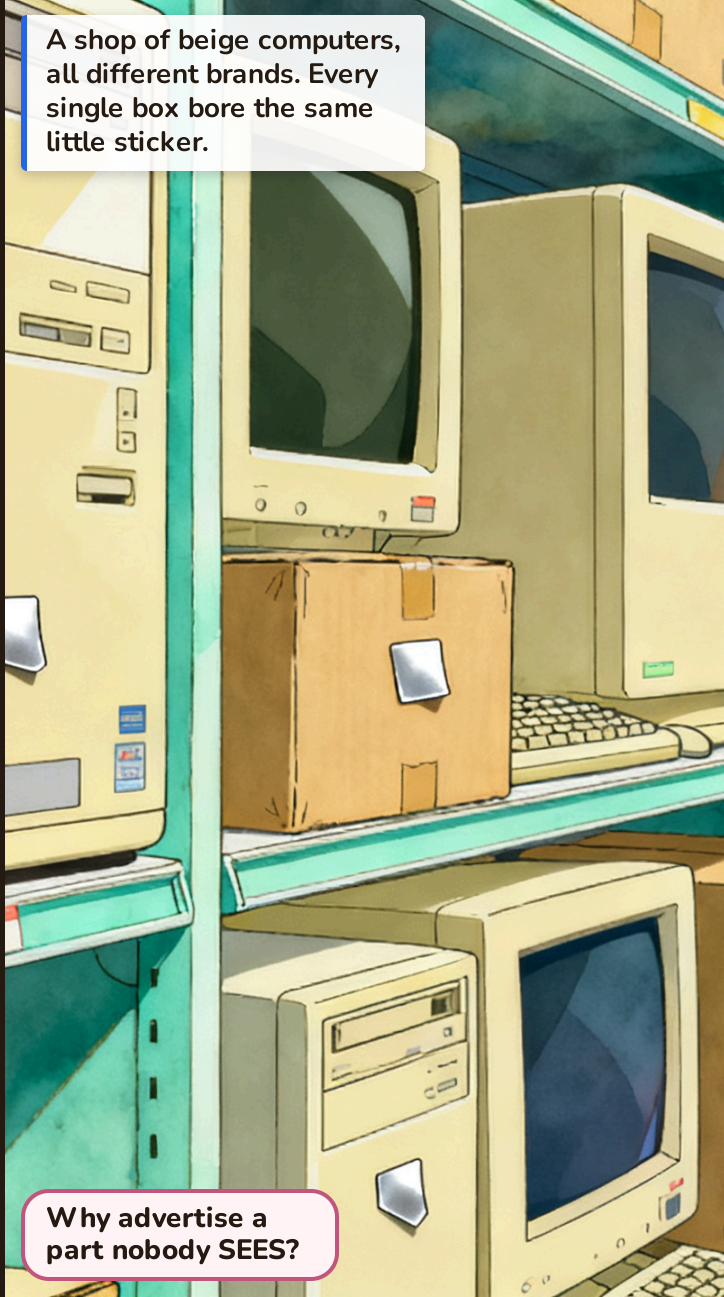
My code is talking to HISTORY.



SIRI'S SECRET NOTEBOOK

Answer #1: THE LANGUAGE. Millions of programs learned one family of orders → new chips keep speaking it → switching costs everybody money. A wall built out of other people's homework. 📚

THE INGREDIENT WITH A NAME



A shop of beige computers, all different brands. Every single box bore the same little sticker.



"Because in 1991 they decided the hidden ingredient should have a name people could ask for."

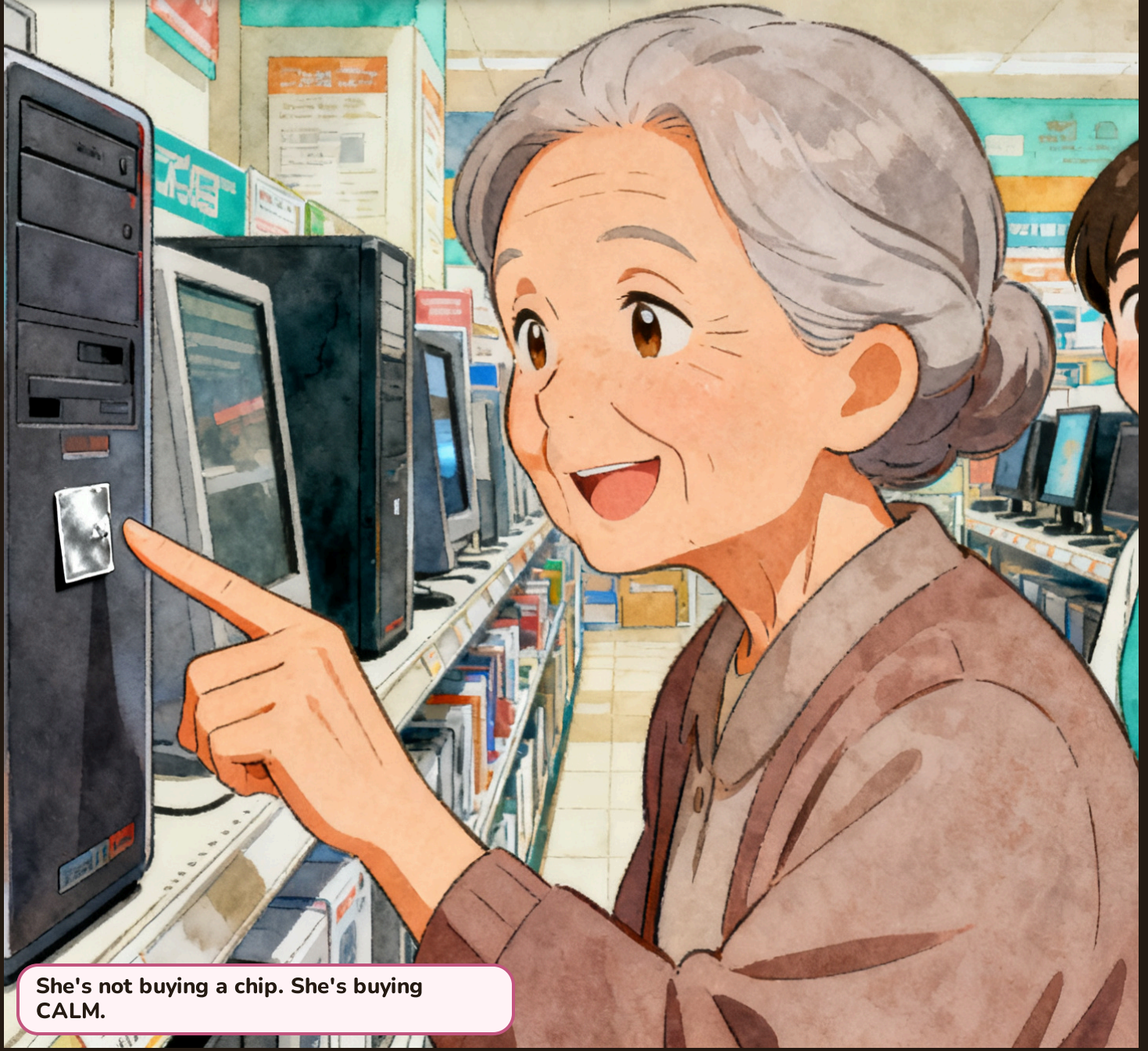
Why advertise a part nobody SEES?

Like asking for real butter!

★ WORTH REMEMBERING

This is an **ingredient brand**: the buyer of the finished machine starts requesting a part inside it. When customers ask for your component by name, the companies assembling the machine can't easily leave you out.

A grandmother in the aisle pointed at the sticker and simply said she trusted it. That was the whole strategy.



She's not buying a chip. She's buying CALM.

★ WORTH REMEMBERING

Trust is slow money. A feature can be copied in a year; a reputation for 'the safe choice' takes decades and thousands of kept promises. That is why the sticker mattered more than any advertisement. 🤝

And when one famous chip did have a maths flaw, the fix was enormous, public and expensive.



They REPLACED them all?

A promise you only keep when it's cheap isn't a promise.



SIRI'S SECRET NOTEBOOK

Answer #2: THE NAME ON THE INSIDE. 1991: put the ingredient's name on the outside → shoppers ask for it → assemblers must include it. And when a flaw appeared, they paid dearly to keep the promise. 🏷️

COPY EXACTLY

Two factories, thousands of miles apart, identical down to the colour of the floor tiles.



Why copy the CARPET?!

"Because nobody knows which of ten thousand tiny details makes the yield good. So you copy them ALL."



You copy the things you don't UNDERSTAND?

★ WORTH REMEMBERING

Chip recipes are so delicate that a working process is treated as sacred: same tools, same order, same settings, same everything. Humility, written as an operating rule.

"And every month the recipe improves a little. Ten years of little improvements is a moat nobody can jump."



So the real product is the **LEARNING!**

★ WORTH REMEMBERING

This is a **learning curve**. The hundredth wafer teaches you what the first could not. A rival can buy the same machines and still be years behind, because they cannot buy your mistakes.

Then Iris showed her the price tag of a single new factory.
Siri sat down on the floor.



More than an AIRPORT?

Years to build. Billions to fill. Every time.

SIRI'S SECRET NOTEBOOK

Answer #3: THE RECIPES. Copy the working fab EXACTLY, carpet and all → improve monthly → ten years of learning nobody can buy. Plus a factory costs more than an airport. Two walls in one. 🖋️ 📦

THE COMPANY THAT BET ON SAND

The compass hauled them past orchards to a windowless silver factory glowing at sunrise. Siri knew the name.

"1968. Two scientists left safe jobs: Robert Noyce, who helped invent the modern integrated circuit, and Gordon Moore."

They quit to sell... SAND?

"Their first business was memory chips. Silicon that remembers — cheaper and smaller every year."

INTEL! The first thinking chip was theirs!

So they didn't start with brains?

"Then a calculator company asked for a custom chip. The team offered something braver: one general processor."



And it WORKED?

"1971. The 4004: an entire computer on one chip. 2,300 switches, thinner lines than any pencil could draw."



2,300?! Mine has BILLIONS!

★ WORTH REMEMBERING

Compare gently: the 4004 held about **2,300 transistors**; a modern processor holds many billions. Same idea, same physics, same company's ambition — repeated for over fifty years.



SIRI'S SECRET NOTEBOOK · THE REVEAL

INTEL. 1968: two scientists, memory chips. 1971: a calculator order becomes the 4004 — a whole computer on ONE chip, 2,300 switches. From that square to my billions. I actually gasped. ☐

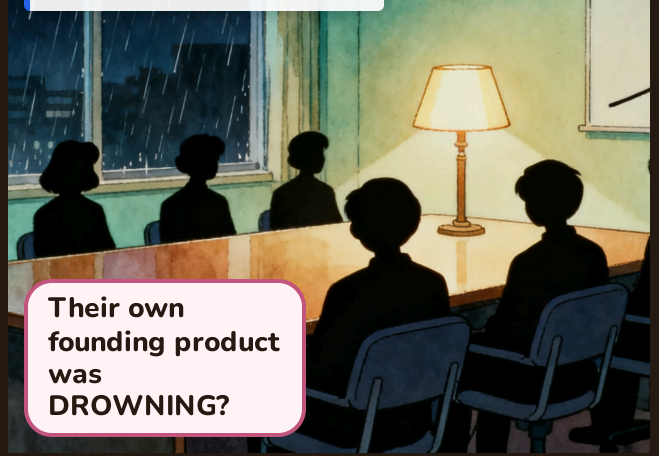
THE BRAVEST GOODBYE

"1981: a famous personal computer chose an Intel brain. Offices, schools and bedrooms filled up fast."



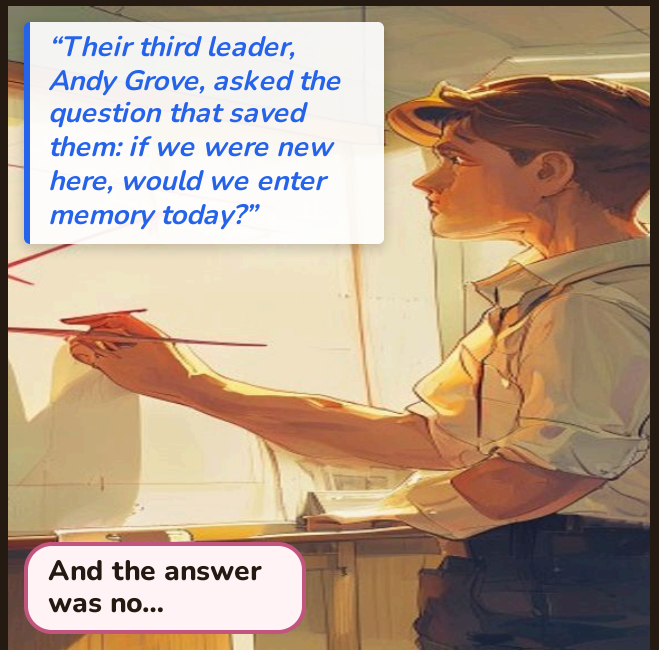
THAT'S why they all spoke the same language!

"But memory — their FIRST business — was collapsing. Fierce rivals, falling prices, losses every month."



Their own founding product was DROWNING?

"Their third leader, Andy Grove, asked the question that saved them: if we were new here, would we enter memory today?"



And the answer was no...

★ WORTH REMEMBERING

In 1985 Intel **walked away from memory chips** — the business it was founded on — to bet everything on processors. Leaving the thing you are famous for is the hardest decision a company ever makes.

Every year after, more of the profit went straight back into new factories and finer lines.



They spend the treasure on the NEXT castle!

And Moore's own 1965 prediction became the company's private drumbeat: double, again, on schedule.



A promise to keep FOREVER?

That was the job. Every two years.



THE STORY IN TIME

1968

Robert Noyce and Gordon Moore found Intel to build silicon memory.

1971

The 4004 — the first microprocessor anyone could buy: 2,300 transistors.

1978

The 8086 begins the x86 family that software still speaks today.

1981

A famous personal computer picks an Intel brain. Offices fill up.

1985

Intel quits memory chips — its founding business — for processors.

1991

'Intel Inside': the hidden ingredient puts its name on the outside.

1993

The Pentium era. Chips become household words.

2006

The Core generation. Many runners replace one sprinter.

2010s

Rivals close the manufacturing gap. Phones are missed.

Today

Billions of switches per chip, new fabs rising, and a fight to lead again. 

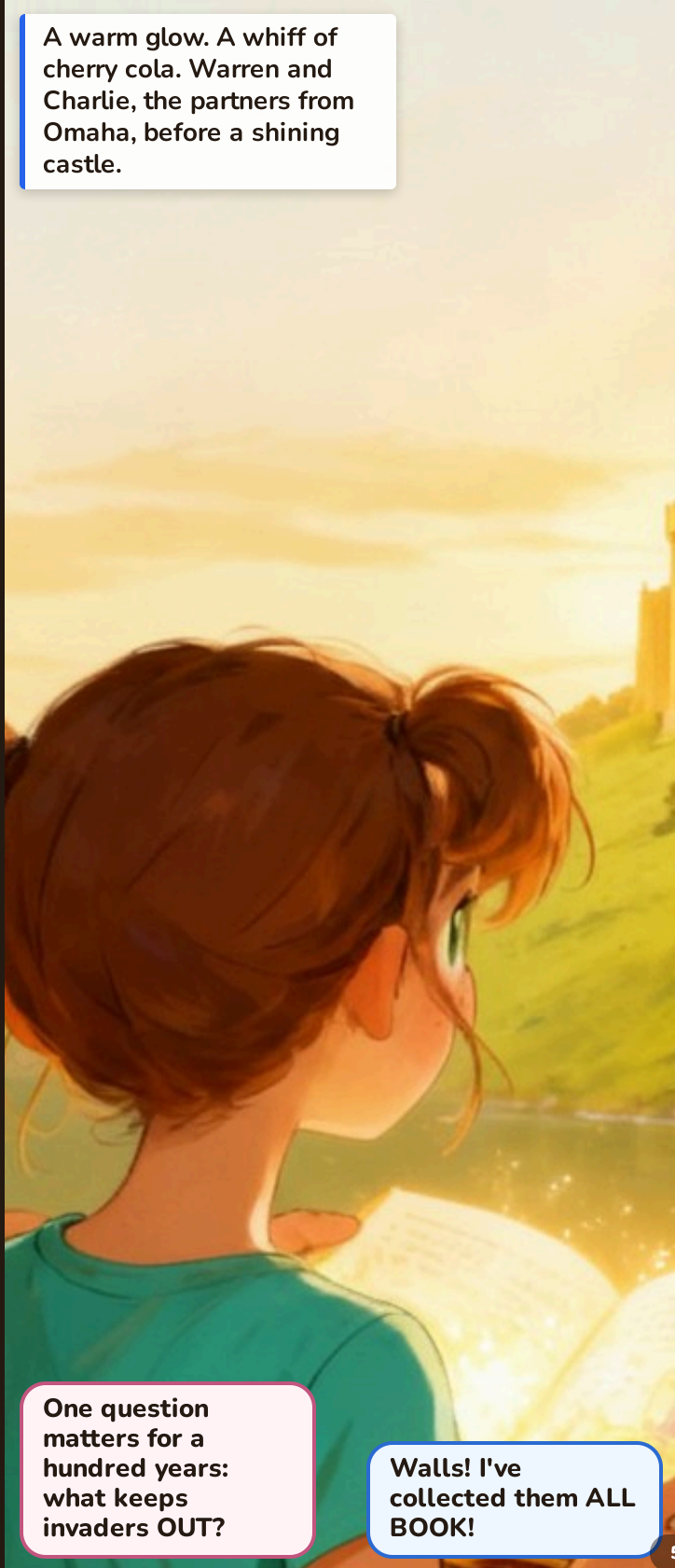


SIRI'S SECRET NOTEBOOK

1981 PCs → but memory was dying → 1985
they QUIT their founding business → all-in on
processors → profits poured into new fabs,
forever. Lesson: love the future, not the habit.



THE CASTLE OF SAND



A warm glow. A whiff of cherry cola. Warren and Charlie, the partners from Omaha, before a shining castle.



Under a walnut tree the two old friends let her lay out the walls, one at a time. Nodding. Chuckling. Correcting.

One question matters for a hundred years: what keeps invaders OUT?

Walls! I've collected them ALL BOOK!

Scarier than any school quiz. And funnier.



THE CASTLE WALLS · WHY RIVALS CAN'T COPY IT



Wall One: Factories Few Can Build

A leading fab costs more than an airport and takes years to fill. Wanting to compete is easy; funding it for decades is not.



Wall Two: A Language Software Speaks

Millions of programs were written for one instruction family. Changing it means the whole world rewrites its homework.



Wall Three: Recipes Learned the Hard Way

Yield comes from ten thousand small tricks, copied exactly and improved monthly. You can buy the machines; you cannot buy the decade.



Wall Four: The Trusted Ingredient

Buyers who never see the chip still ask for it by name — so the companies assembling the machine keep it inside.

Charlie tapped his thick glasses. *"Turn the telescope around. Don't ask how it wins — ask what would DESTROY it. Invert, always invert."*



Find every way to LOSE... then don't go there!



THE CASTLE WALLS • WHY RIVALS CAN'T COPY IT



Crack One: The Wave It Missed

Phones needed chips that sip power, and a different design family won that world. A wall protects a castle, not a whole continent.



Crack Two: Finer Lines Elsewhere

For years Intel printed the finest lines on Earth. Then a specialist manufacturer pulled ahead, and being second in a race of two is expensive.



Crack Three: Hungry New Factories

New fabs swallow enormous money years before they earn any. Great if they work on time. Painful if they don't.



Crack Four: The Shape of Computing Shifts

When AI moved the centre of gravity toward chips built for massive parallel maths, the old throne got smaller.



★ WORTH REMEMBERING

Charlie's ruin-it checklist: fall behind in manufacturing. Miss the next kind of computer. Assume yesterday's lead is a birthright. Now — **simply never do those.** Inversion turns worry into a checklist.

Warren raised his cola. *"Wonderful and hard are different words, Siri. This castle must be rebuilt every few years to stay a castle."*



The treasure was never the chip!

SIRI'S SECRET NOTEBOOK · THE CASTLE

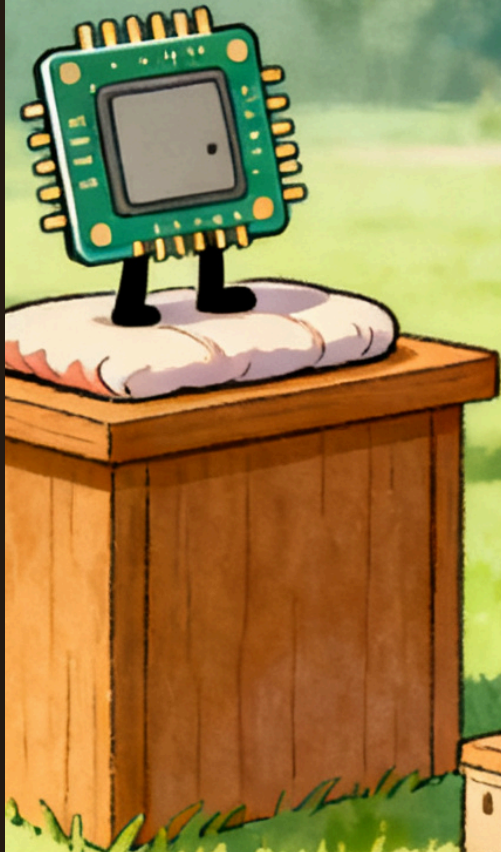
WALLS: fabs 🏠 language 📖 recipes 🍴 trusted name 🤝. CRACKS: missed phones 📱 finer rivals 🧐 hungry fabs 🏗️ AI shift 🧠. Charlie: INVERT.
Warren: some castles need rebuilding forever. 🏰

THE JUDGE'S QUESTIONS

Then Warren built a tiny courtroom in the grass — and put the CHIP on the witness stand.

TOK TOK

Siri banged the little gavel and fired Warren's five eternal questions at the witness.



Order in the court!



Question one: will people still **NEED** you in thirty years?



★ WORTH REMEMBERING

The Owner's Court: ⚖️ Enduring need? —
'Thinking machines, in everything.' ⚖️ Trust
earned? — 'Decades of it, and one famous flaw
paid for dearly.' ⚖️ Reinvesting wisely? —
'Almost everything, into fabs and finer light.
That is the whole job.' ⚖️ Copyable with money?
— 'The design, in years. The recipes and the
language, far longer.' ⚖️ What breaks you? —
'Falling behind in manufacturing. Nothing else
comes close.'

Last exhibit: a painting of 2056. Machines everywhere, thinking quietly. Not one of them made of nothing.



The shape changes. The NEED never does.

SIRI'S SECRET NOTEBOOK • JUDGE ANY BUSINESS

Warren's five: ① enduring need? ② trust earned? ③ reinvests wisely? ④ copyable with mere money? ⑤ what breaks it? Works on soap, railways, sneakers — anything. (He never mentioned a share price. The judge judges the BUSINESS.) ⚖️

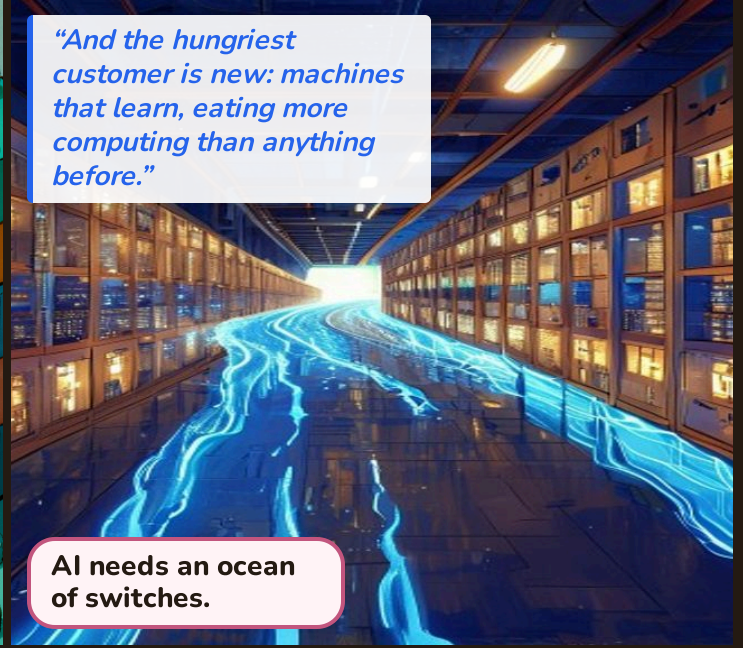
THE NEXT THIRTY YEARS

"One giant chip is getting too hard. So we build small ones and stack them like bricks in a package."



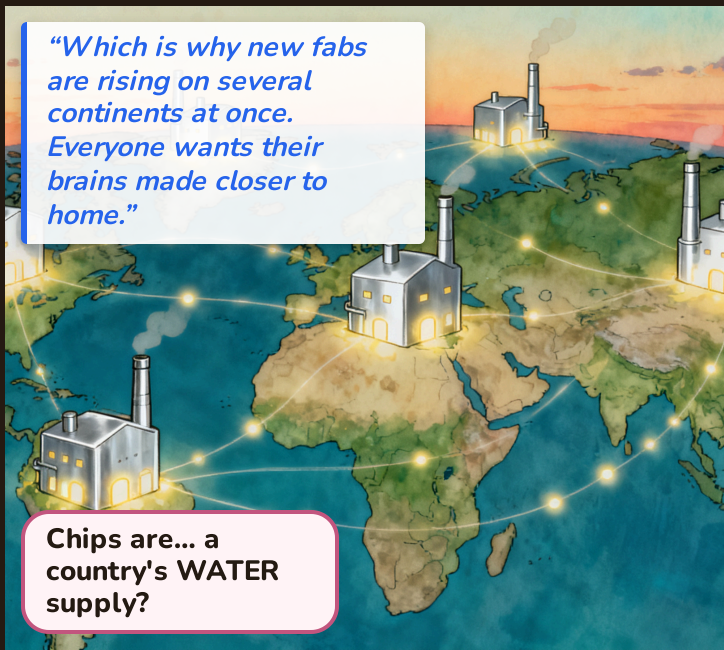
LEGO for brains!

"And the hungriest customer is new: machines that learn, eating more computing than anything before."



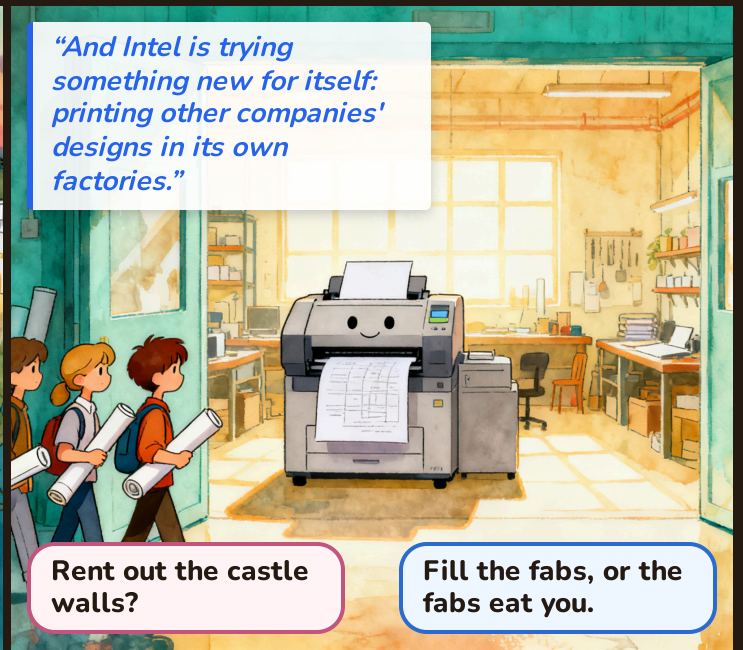
AI needs an ocean of switches.

"Which is why new fabs are rising on several continents at once. Everyone wants their brains made closer to home."



Chips are... a country's WATER supply?

"And Intel is trying something new for itself: printing other companies' designs in its own factories."



Rent out the castle walls?

Fill the fabs, or the fabs eat you.

★ WORTH REMEMBERING

No crystal balls — just visible currents: chiplet stacks, shorter light, AI's endless appetite, and factories spreading across the map. Siri's rooftop rule: **don't bet on the square — bet on the needs.** 🌟

On the rooftop at dusk she added the honest last line: a thinking machine is a tool. Tools serve masters.



Best servant. Worst master. Same as fire.

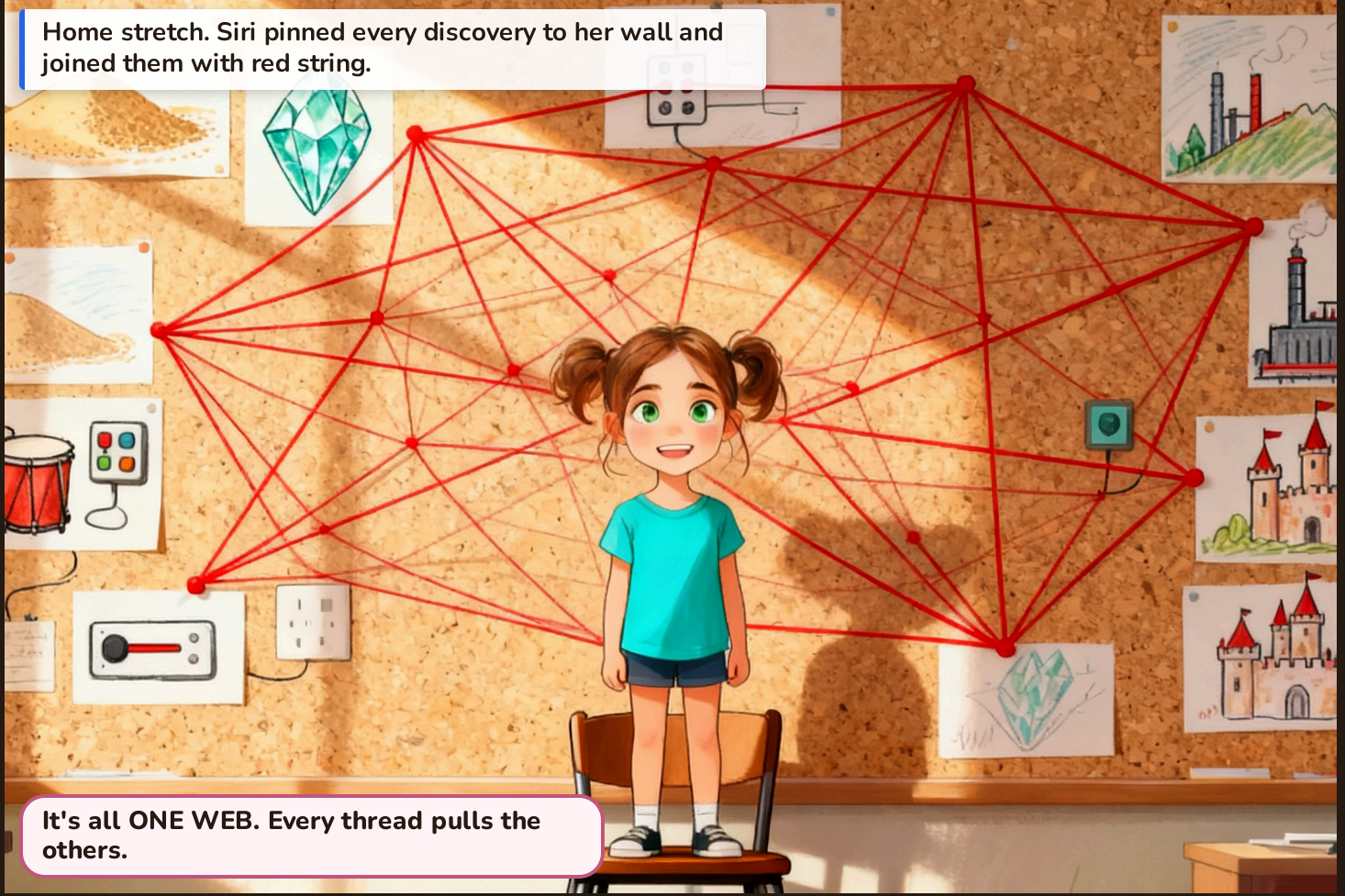


SIRI'S SECRET NOTEBOOK

2056 watchlist: chiplet stacks, shorter light, AI eating computing, fabs on every continent, making chips for others. Rules: bet on needs not shapes · manufacturing IS the moat · stay the master. 🌟

THE SECRET NOTEBOOK

Home stretch. Siri pinned every discovery to her wall and joined them with red string.



It's all ONE WEB. Every thread pulls the others.

★ WORTH REMEMBERING

The Science Web, one breath: quartz → nine-nines silicon → one perfect crystal → doped on purpose → a switch with no moving parts → gates that make rules → adders → a clock to keep time → printed with violet light, layer on layer → tested, sorted, packaged.

★ WORTH REMEMBERING

The Business Web, one breath: a general chip serves a thousand customers → a language everyone learns → a name people ask for → recipes and factories nobody can copy quickly → and profits poured back in forever, patrolled by Charlie's inversion and judged in Warren's court.

The real test: she retold the whole thing to her little cousin. With a torch and a light switch. He got it.



If you can't explain it with a light switch, you don't know it yet.

SIRI'S SECRET NOTEBOOK • THE LATTICEWORK

Charlie's word for my string-wall: a LATTICEWORK. Twelve models from ONE square: arrangement-not-ingredients • spoil-it-on-purpose • switch → decision → anything • clocks • heat is boss • yield • learning curve • switching costs • ingredient brand • scale • invert • the owner's court. 

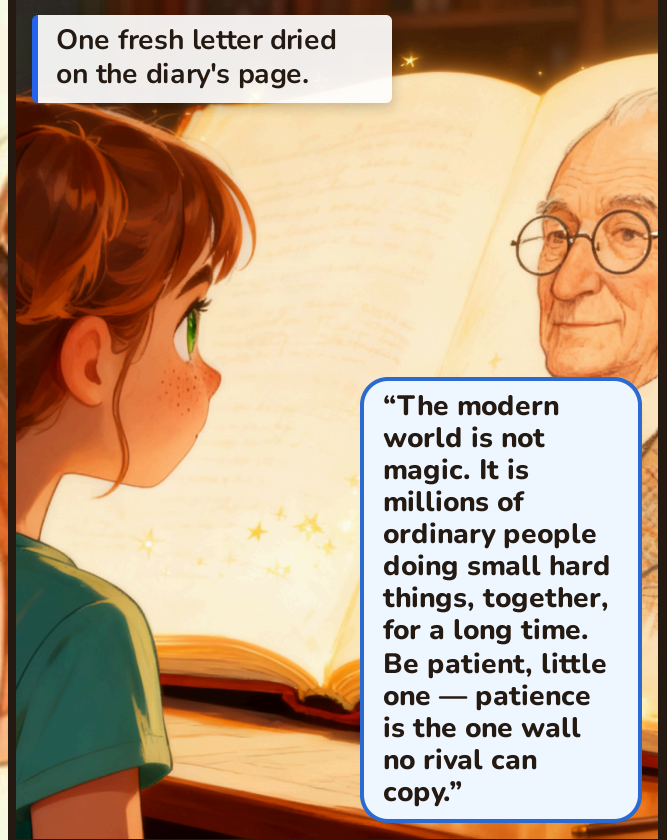
COMING HOME

Her own bed. Morning. The compass: quiet. The house: lit differently, somehow.



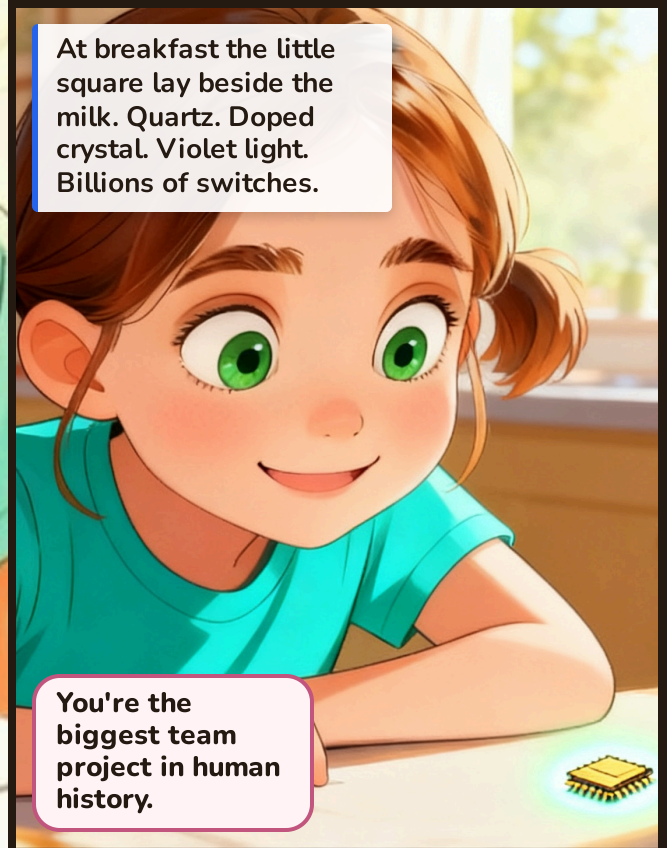
Was it real? It FELT real...

One fresh letter dried on the diary's page.



"The modern world is not magic. It is millions of ordinary people doing small hard things, together, for a long time. Be patient, little one — patience is the one wall no rival can copy."

At breakfast the little square lay beside the milk. Quartz. Doped crystal. Violet light. Billions of switches.



You're the biggest team project in human history.

Then she went hunting: the thermostat, the doorbell, the car, the washing machine. Twenty-one squares before lunch.



My house is FULL of tiny obedient beaches!

She hugged the diary tight. Far away, a silver factory caught the morning sun.



Show me the next one, Grandpa. 🧡

★ WORTH REMEMBERING

Feel the unlock: sand grown perfect, spoiled on purpose, printed with storm-light into billions of switches marching to a drum. **Nothing, from now on, is just anything.**

📖 SIRI'S SECRET NOTEBOOK · BOOK CLOSED

Seven doors. Twelve mental models. One castle that must be rebuilt forever. One brave goodbye to its own first business. But the compass is twitching at a chip from a phone — a name I've never heard, on one quiet island. 🧭



OUR PHILOSOPHY

We believe the greatest gift we can give a child is the ability to think.

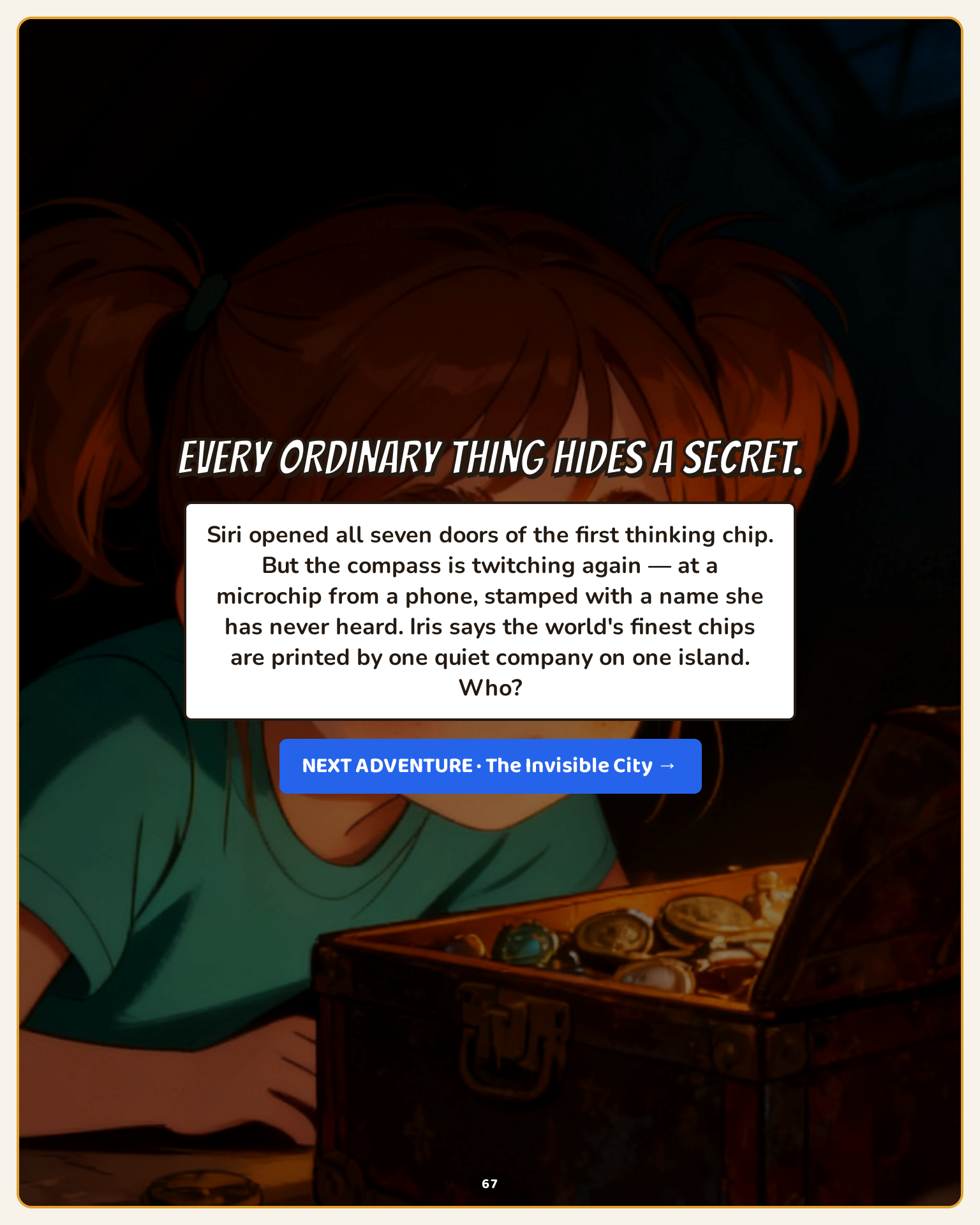
Inspired by the multidisciplinary thinking of [Charlie Munger](#) and the rational, long-term philosophy of [Warren Buffett](#), our comics connect science, technology, business, history, and human behavior to show how the real world works.

Every story begins with a scientific idea and follows its journey into innovation, industry, and the businesses that create value for society. Along the way, children learn that great companies are built on curiosity, experimentation, integrity, and long-term thinking.

Our goal is not to teach children how to invest, but to help them build the mental models needed to understand the world, ask better questions, and think independently.

The companies featured in *The Great Company Adventures* are educational case studies—not investment recommendations. They show how knowledge, innovation, and perseverance turn ideas into products, services, and enduring businesses.

LEARN THE SCIENCE. • UNDERSTAND THE BUSINESS. • THINK FOR LIFE.

A girl with red hair in pigtails, wearing a green shirt, is looking into an open wooden treasure chest filled with gold coins and jewels. The scene is dimly lit, with a warm, orange glow from the treasure.

EVERY ORDINARY THING HIDES A SECRET.

Siri opened all seven doors of the first thinking chip.

But the compass is twitching again — at a microchip from a phone, stamped with a name she has never heard. Iris says the world's finest chips are printed by one quiet company on one island.

Who?

NEXT ADVENTURE • The Invisible City →