

The Great Company Adventures • Book 42 of 50

MICROSOFT THE INVISIBLE MACHINE



A curious girl, three wise mentors, and the windowless building that quietly holds the whole world's homework.

"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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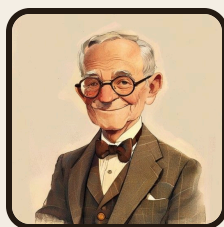
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MEET THE CHARACTERS



SIRI



BEN



WARREN



CHARLIE



KIRA

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 WORD THAT ISN'T A WORD

Midnight. Homework saved.
And Grandpa Ben's old brass
compass? Spinning like crazy.

SPIN

The needle stopped.
Pointing at the laptop.
At three small words
glowing on it: saved to
the cloud.

The CLOUD?
What cloud?!

The magic diary flipped
open by itself. Fresh ink.
Grandpa's handwriting.

It's never done THIS
before...

"Every photo you
keep, every
game you play,
every homework
you save —
something
invisible is
holding it. Go
and find the
machine."

★ WORTH REMEMBERING

There is no cloud in the sky. Your photo is not floating. It is sitting on a real machine, in a real building, in a real place — a building you could walk into. So **where is it, and who is holding it?**

The screen rippled. A whirlpool of blue light grabbed her.

WHOOSH



Here we GOOO!



SIRI'S SECRET NOTEBOOK

New mystery! ☁️

- ① If the cloud is a place, WHERE is my homework tonight?
- ② Grandpa says this invisible thing built a giant company. Prove it.

THE BUILDING WITH NO WINDOWS

She landed in a corridor of humming cabinets stretching out of sight. Thousands of tiny lights blinked.

An engineer stepped out holding a small metal box. *"I'm Kira. I look after the cloud. This is a piece of it."*

THAT'S the cloud? It's a BOX?

Outside: a windowless hall longer than several football fields. Cooling towers. A power yard. No sign.

How many machines live here?

Hundreds of thousands. And this is one building.

It's a CITY of blinking fireflies!

★ WORTH REMEMBERING

A data center is a warehouse full of computers that never sleep. Hundreds of them exist worldwide. They hold your photos, your school files, and most of the internet you use every day.

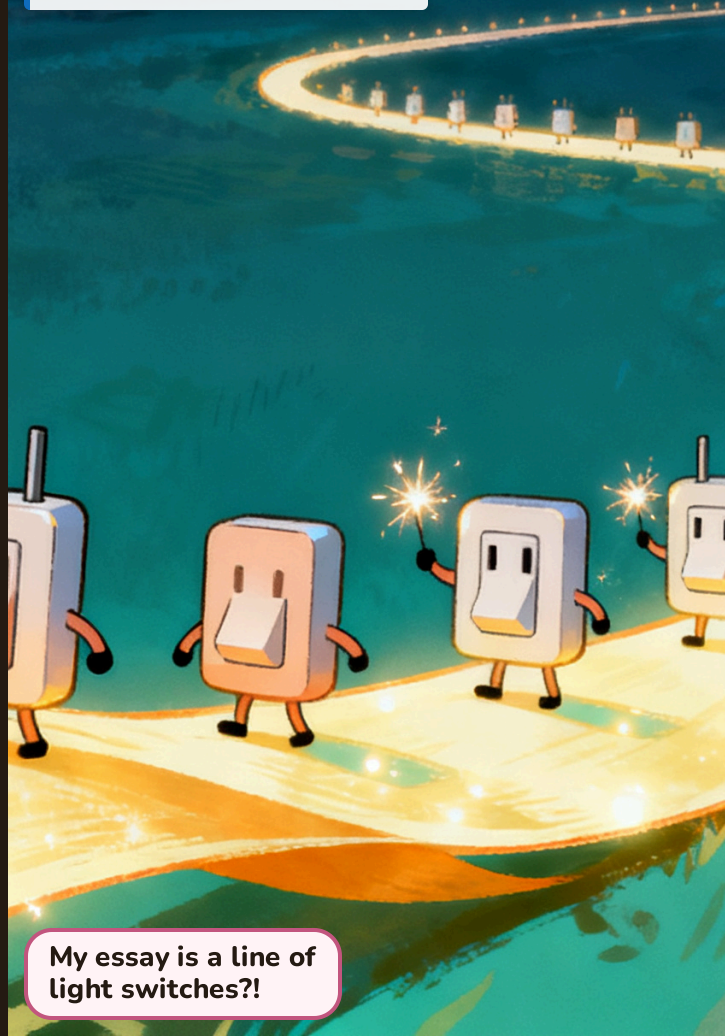
📖 SIRI'S SECRET NOTEBOOK

The cloud = warehouses full of computers. No windows. Never sleeps. 🏢 Kira says the first question is the hardest: how does my file even GET here?

HOW A FILE LEARNS TO FLY

3a Everything is switches

"Before it travels, your homework becomes numbers. And numbers become switches. On, off, on, off."



My essay is a line of light switches?!

"Then we tear it into little numbered pieces. Each piece finds its own road. They reassemble at the end."



Like a puzzle posted in pieces!

★ WORTH REMEMBERING

Nothing you send travels as one lump. It is chopped into **packets** — small numbered parcels. If one gets lost, only that parcel is resent. That is why the internet bends but rarely breaks. 📦

*"And the road? Glass.
Thinner than your hair.
Your parcels ride inside as
pulses of light."*

Kira held up a spool of fiber. A beam went in one end and landed, warm, on Siri's palm.

Light bouncing
down a glass
straw!

It went all the way
AROUND?

Bouncing. Light
never touches the
sides.

★ WORTH REMEMBERING

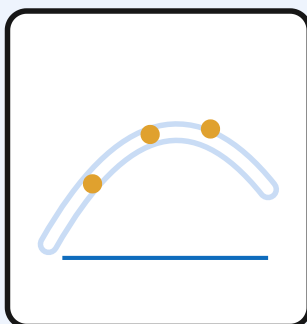
Light in glass is bounced along by **total internal reflection** — hit the wall at a shallow angle and it reflects perfectly, every time. One fiber can carry millions of conversations at once. 💡



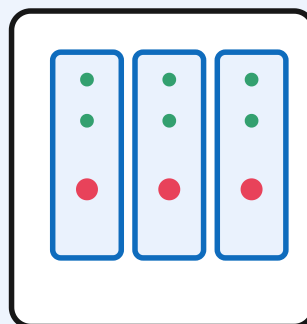
HOW A FILE REACHES THE CLOUD



CUT INTO PARTS
small numbered



LIGHT IN GLASS
bounce, bounce



THREE COPIES
three places



SIRI'S SECRET NOTEBOOK

- ① File → numbers → switches → packets 
- ② Packets ride LIGHT down hair-thin glass.
Bounce, bounce, bounce.
- ③ Lost a parcel? Resend one, not the whole thing. Clever!

THE MACHINE THAT NEVER SLEEPS

Inside a cabinet: mirror discs spinning fast, a tiny arm floating a whisker above each surface.



It's flying without touching!

★ WORTH REMEMBERING

A disk arm hovers closer to the surface than a smoke particle is wide, while the disk spins thousands of times a minute. If it touched, the data would be gone. It never touches.

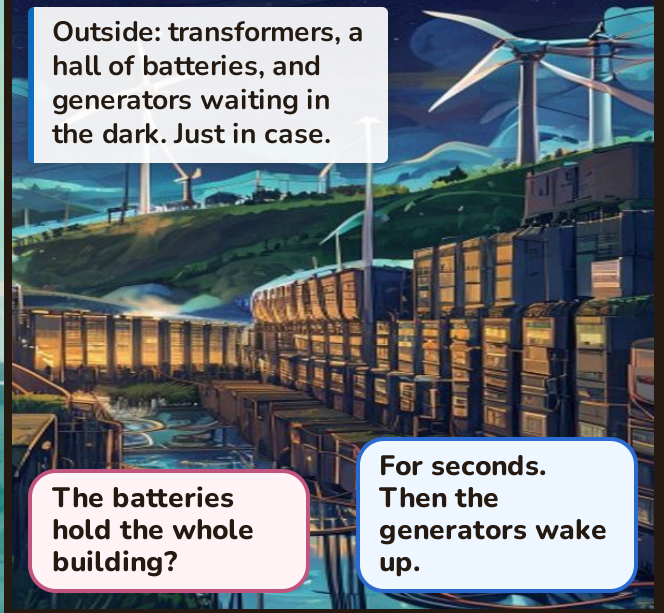
"So we assume everything breaks. Your file is copied three times, to three separate places."



Three copies? Isn't that wasteful?

It's cheaper than losing your homework.

Outside: transformers, a hall of batteries, and generators waiting in the dark. Just in case.



The batteries hold the whole building?

For seconds. Then the generators wake up.

Back inside, cold air poured in at their feet and warm air climbed away above. Siri's ponytails lifted.

WHOOOSH



It's BREATHING!

★ WORTH REMEMBERING

Every switch that flips makes a whisper of heat. Multiply by trillions and a server hall becomes an oven. So half the engineering here isn't computing at all — it's **keeping the machines cool**. 🌬️

📖 SIRI'S SECRET NOTEBOOK

Discs fly without touching. Files kept in **THREE** places. Batteries → generators → never dark. And the hardest job is heat. Computers are basically very clever radiators. 🔥

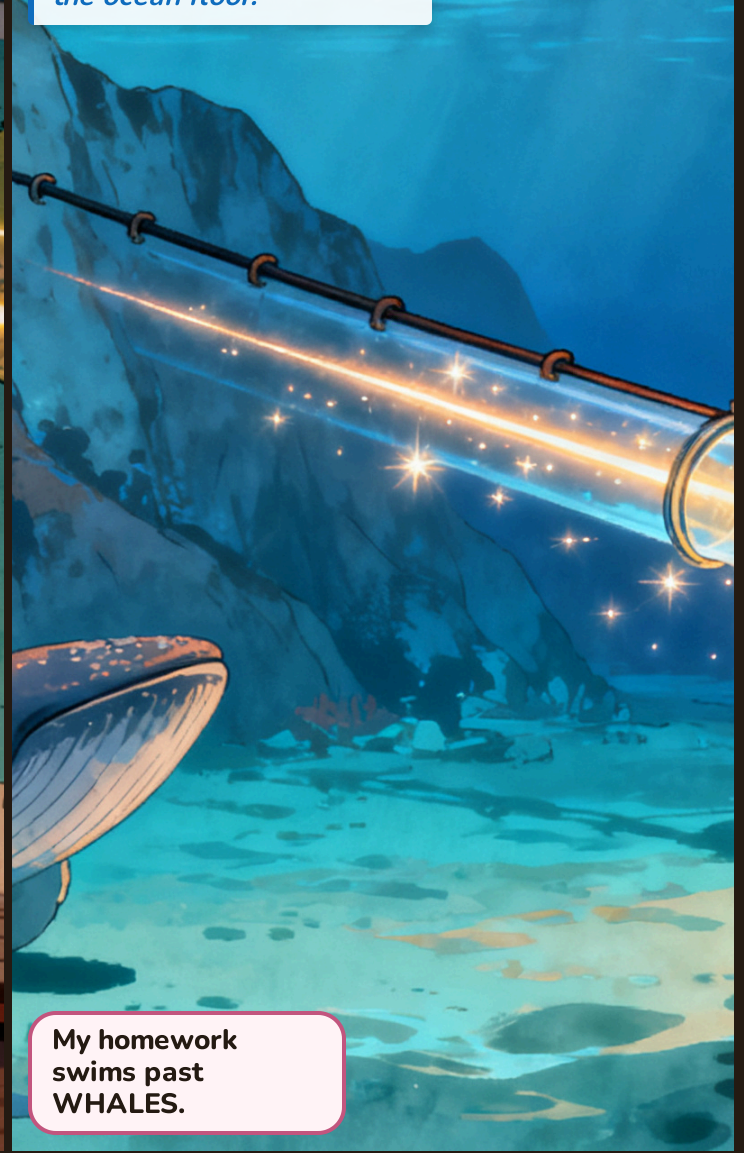
THE WEB AROUND THE WORLD

Kira unrolled a world map. Glowing points on every continent, joined by arcs of light.



One building? Try dozens of regions.

"Between continents your parcels swim — as laser light, in armored cables on the ocean floor."



My homework swims past WHALES.

★ WORTH REMEMBERING

Almost all intercontinental internet traffic travels through undersea cables, not satellites. Light in glass is faster and far cheaper. A cable no thicker than a garden hose can carry a nation. 🌊

The splicer. The cooling tech. The guard. The night watcher. The battery engineer. The driver.



Nobody here builds the **WHOLE** thing!

3am. A quiet room. A wall of gentle maps. Somebody is always awake so nobody has to notice.



This is what 'it just works' looks like.

★ WORTH REMEMBERING

Here's the mind-bender: **nobody on Earth knows how to build the cloud.** Not one person. Each expert masters one sliver — and a great company turns thousands of slivers into one invisible machine.

📖 SIRI'S SECRET NOTEBOOK

Dozens of regions 🌍 · undersea laser cables · a night shift that never ends. Nobody knows the whole recipe. So who's the CONDUCTOR? 🎵

WHY ANYONE WOULD RENT A MACHINE

"Before this, every business bought its own computers. Guess wrong and you'd waste a fortune."



So they buy vans they barely drive!

"Now they rent. Need a thousand machines for one hour? Take them. Done? Give them back."



The hall GROWS when you need it!

★ WORTH REMEMBERING

This is **elasticity**, and it changes who can build things. A hospital, a school, or a kid with an idea can borrow a supercomputer for an afternoon — and pay only for the afternoon. ⚡

"And builders write tools on top. More tools bring more customers. More customers bring more tools."



The bridge grows as people cross it!

★ WORTH REMEMBERING

Why spend billions on windowless warehouses? ① Buying a million machines makes each one far cheaper — **scale**. ② Once your work lives there, moving is painful. ③ Builders and customers pull each other in. 🏗️

📖 SIRI'S SECRET NOTEBOOK

Own → rent. Pay for the afternoon, not the decade. Scale makes it cheap, builders make it sticky. Grandpa's rule: find what people would HATE to live without.

THE COMPANY THAT TURNED ITSELF AROUND

Through the evergreens: a campus of glass in the rain. Siri knew the four-square window on the gate.

"It started in 1975. Two school friends, Bill Gates and Paul Allen, writing software for a hobby computer."

MICROSOFT! The invisible machine is Azure!

SOFTWARE? Not the machine itself?

★ WORTH REMEMBERING

Their first bet was the strange one: sell the **instructions**, not the machine. Software costs almost nothing to copy — so one good idea can reach a hundred million desks. That bet built an empire. 💾

"By the 1990s, Windows and Office ran the world's offices. Enormously successful. And then... the world moved."



Moved WHERE?

To phones. And to the cloud.

"In 2014 a new leader turned the ship. Cloud first. Even if it hurt the old business."



They competed with THEMSELVES?

★ WORTH REMEMBERING

The bravest move a big company can make: bet on the thing that **threatens your best product**. Microsoft moved from selling boxes once to running machines forever — and grew larger than ever.



THE STORY IN TIME

1975

Two school friends start a company writing software for hobby computers.

1981

MS-DOS ships with IBM's personal computer. Offices start filling up.

1985

Windows: computers get a friendly face of rectangles and an arrow.

1990

Office bundles the tools every workplace needs.

1995

The internet arrives. Microsoft scrambles to catch it.

2001

Xbox: the company learns to build hardware people love.

2010

Azure opens. Renting machines, not selling boxes.

2014

New leadership turns the ship: cloud first, partners welcome.

2016

LinkedIn joins. 2018: GitHub, home of the world's code.

Today

One of the largest cloud businesses on Earth. ☁

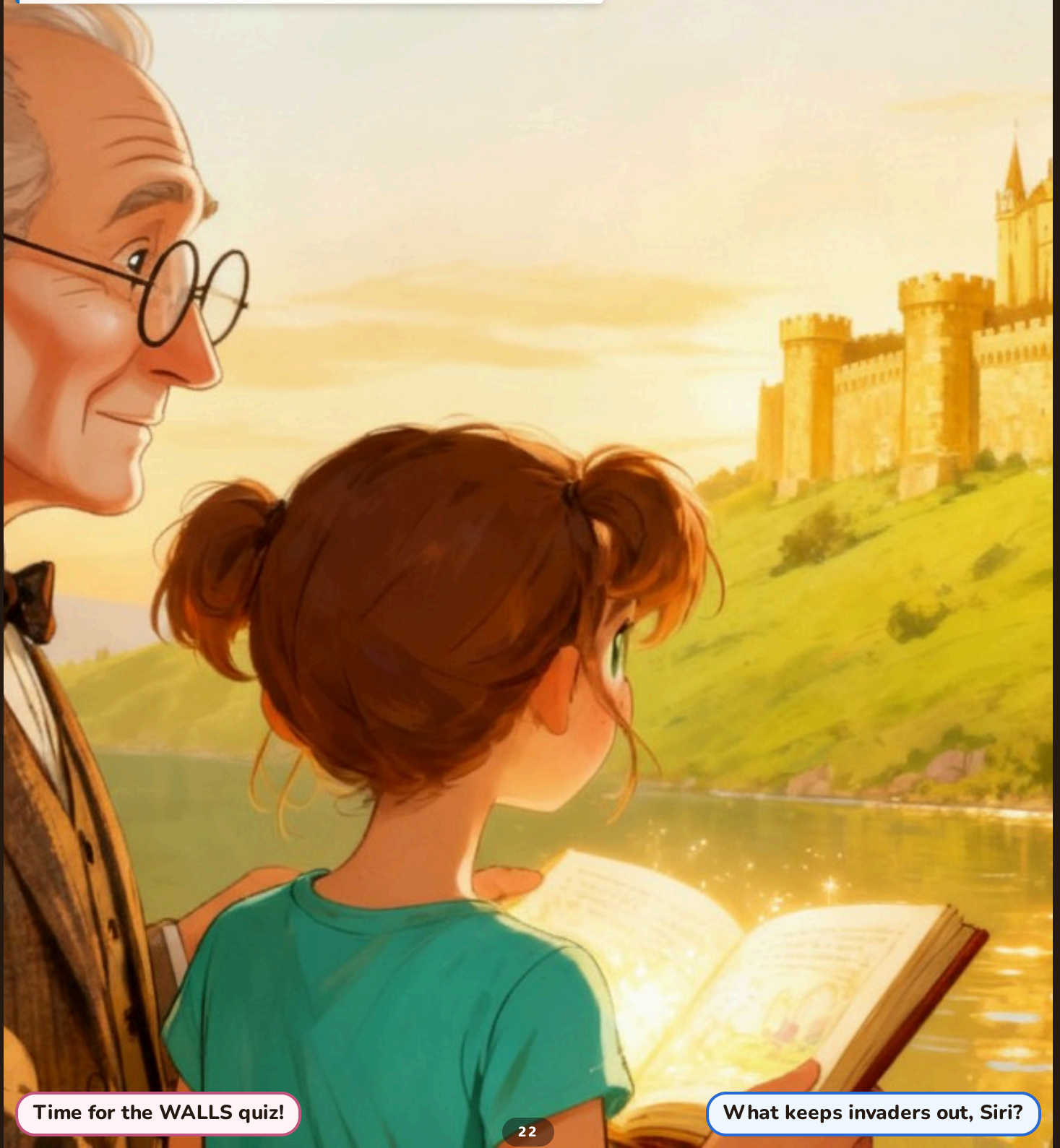


SIRI'S SECRET NOTEBOOK

Sell instructions, not machines → Windows everywhere → nearly missed the internet → then bet the company on the CLOUD. They out-competed their own best product. 🚢

THE CASTLE WITH NO DOORS

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



Time for the WALLS quiz!

What keeps invaders out, Siri?



THE CASTLE WALLS • WHY RIVALS CAN'T COPY IT



Wall One: The Mountain of Money

Building data centers costs tens of billions a year. Very few companies on Earth can even try. That price is a wall.



Wall Two: Where the Work Lives

Once a hospital's records and a bank's systems run here, moving them takes years. Nobody moves for fun. (Grown-ups say: switching costs.)



Wall Three: The Boring Promise

Businesses buy reliability and safety before they buy cleverness. Decades of keeping that promise is not something money can buy quickly.



Wall Four: The Builders' Bridge

Millions of developers already know these tools. More tools pull more customers; more customers pull more tools. A rival must build both sides at once.



The Cracks in the Walls

Two giant rivals fight for the same customers. Rule-makers watch closely. Chips are scarce and power is scarce. And one bad security week can dent a promise built over decades.

Charlie tapped his glasses. *"My trick: don't ask how to WIN. Ask what would DESTROY it. Then don't do that. Invert, always invert."*



Find the ways to lose... then don't!

★ WORTH REMEMBERING

Charlie's checklist for ruining a cloud: break the promise once, badly. Treat locked-in customers as prisoners. Skimp on security. Miss the next wave while guarding the old one. Now — never do those.

Warren raised his cola. *"I look for businesses whose customers can't easily leave and don't want to. Then I ask if the owners reinvest wisely."*



So the treasure isn't the software. It's the WALLS.



SIRI'S SECRET NOTEBOOK

Walls: mountain of money 🏗️ + work lives here 🔗 + boring promise 🤝 + builders' bridge 🌉. Cracks: two rivals, rule-makers, chips, power, one bad week. Charlie: INVERT. 🏰

THE NEXT THIRTY YEARS

"Last question," said Kira.
"What is all this FOR in thirty years?" Proteins folding. Fields mapped. Hearts watched.



The warehouse is becoming a **LABORATORY!**

On a rooftop at dusk, Siri thought it through the way Grandpa taught her.



Don't bet on the building. Bet on the **NEEDS.**

★ WORTH REMEMBERING

The deep currents: machines that learn, wired into everyday work. Chips designed for one job. Power and water becoming the real limit. Shapes will change — but storing, sharing, and computing? Forever. 🌀

📖 SIRI'S SECRET NOTEBOOK

2056 watchlist: learning machines, custom chips, greener power, computers near where you stand. Rule: bet on needs, not buildings.

COMING HOME

Her own bed. Morning. The compass: quiet. The house: somehow different.

Was it real? It FELT real...

One fresh line dried on the diary's glowing page.

"The modern world is not magic. It is millions of ordinary people doing small hard things, together, for a long time."

At breakfast, the family laptop lay beside the milk. Packets. Glass roads. Three copies. A night shift.

You're a doorway, not a machine.

She hugged the diary tight. Somewhere far away, rain fell on a campus of glass.

Show me the next one, Grandpa. ♡

★ WORTH REMEMBERING

Next unlock, feel it: your file torn into parcels, riding light under an ocean, copied three times into a hall that breathes cold air, watched all night by someone you'll never meet. **Nothing, from now on, is just anything.**



SIRI'S SECRET NOTEBOOK • WHAT I LEARNED

- ① There is no cloud — only somebody's warehouse.
- ② Files become switches, then packets, then light.
- ③ Assume everything breaks: keep three copies.
- ④ Half of computing is cooling.
- ⑤ Rent beats buy when needs wobble.
- ⑥ Bet on the thing that threatens you.
- ⑦ Invert! And buy walls, not gadgets. 🧡



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.

EVERY ORDINARY THING HIDES A SECRET.

Siri found the machine behind the cloud. But the compass is twitching again — toward an empty white box on a screen, waiting for her to type. One box. A trillion questions. And an answer in less than a second. How?

NEXT ADVENTURE • The Library With No Walls →