LLMs Unplugged

How AI writes stories

Open warm: today we'll find out how AI writes stories, and write some ourselves with paper and a cup of counters. No computers.

Acknowledgement of Country

Acknowledge the Traditional Custodians of the land you’re meeting on, and pay respects to Elders past and present. Keep it brief and sincere; say it in your own words.

What is AI?

Think → share

when you hear the words **artificial intelligence**, what comes to mind?

think on your own, then share with the person next to you

Get them into their groups as they turn to each other — this is the pairing, so make it the grouping too, and they stay in those groups for the rest of the session. 2 min. Then a quick crowd unpack: does anyone know what AI stands for? What have you talked about in class? Has anyone tried using it — what for?

Let’s ask one to write us a story

we need **three words or ideas** — hands up!

TEACHER

YEAR LEVEL

WORD 1

WORD 2

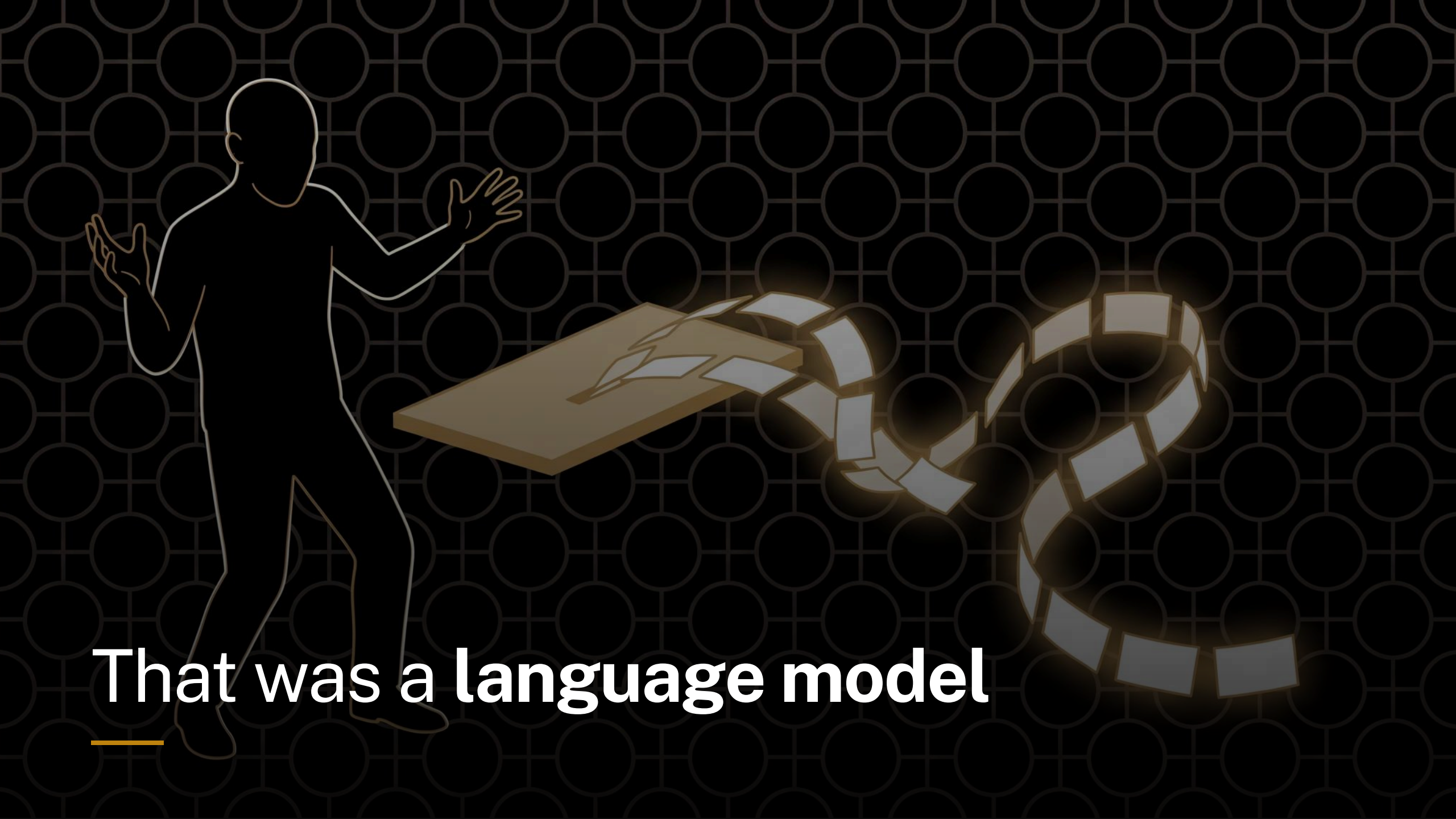
WORD 3

Copy prompt

Collect three words from the class — hands up, choose a few — and write them on the board so everyone can see.

Type your name, the year level and the three words into the boxes on this slide, hit “Copy prompt”, then alt-tab to ChatGPT and paste.

Read the result back dramatically.



That was a **language model**

What just happened?

no person on the other side wrote that story for us

the **language model** learned patterns from huge amounts of text, then copied those patterns to make something new

today we'll build our own language models — **without a computer**

Reinforce: whether or not you use AI, understanding how it works helps you make better choices about when to use it.

Predict the next word

we humans are good at spotting patterns

I’ll start a sentence — hands up if you know the next word

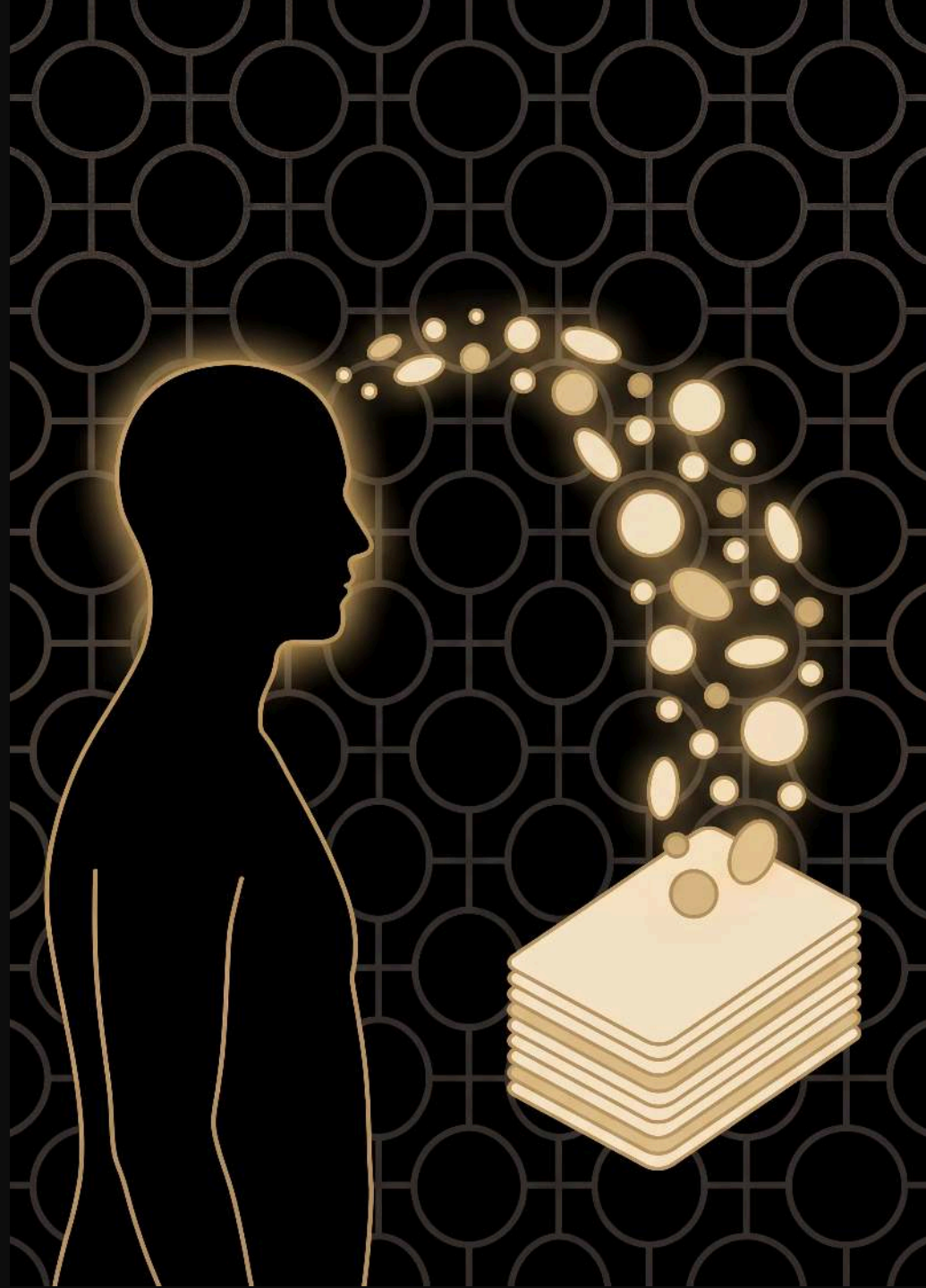
Do a few of these live on the whiteboard, pausing for hands before the last word:

- “be respectful, be responsible, be ______” (swap in this school’s actual values if known)
- “yer a wizard, ______!”
- “I don’t eat chocolate, so at Easter I go hunting for ______”

So how do we teach a model?

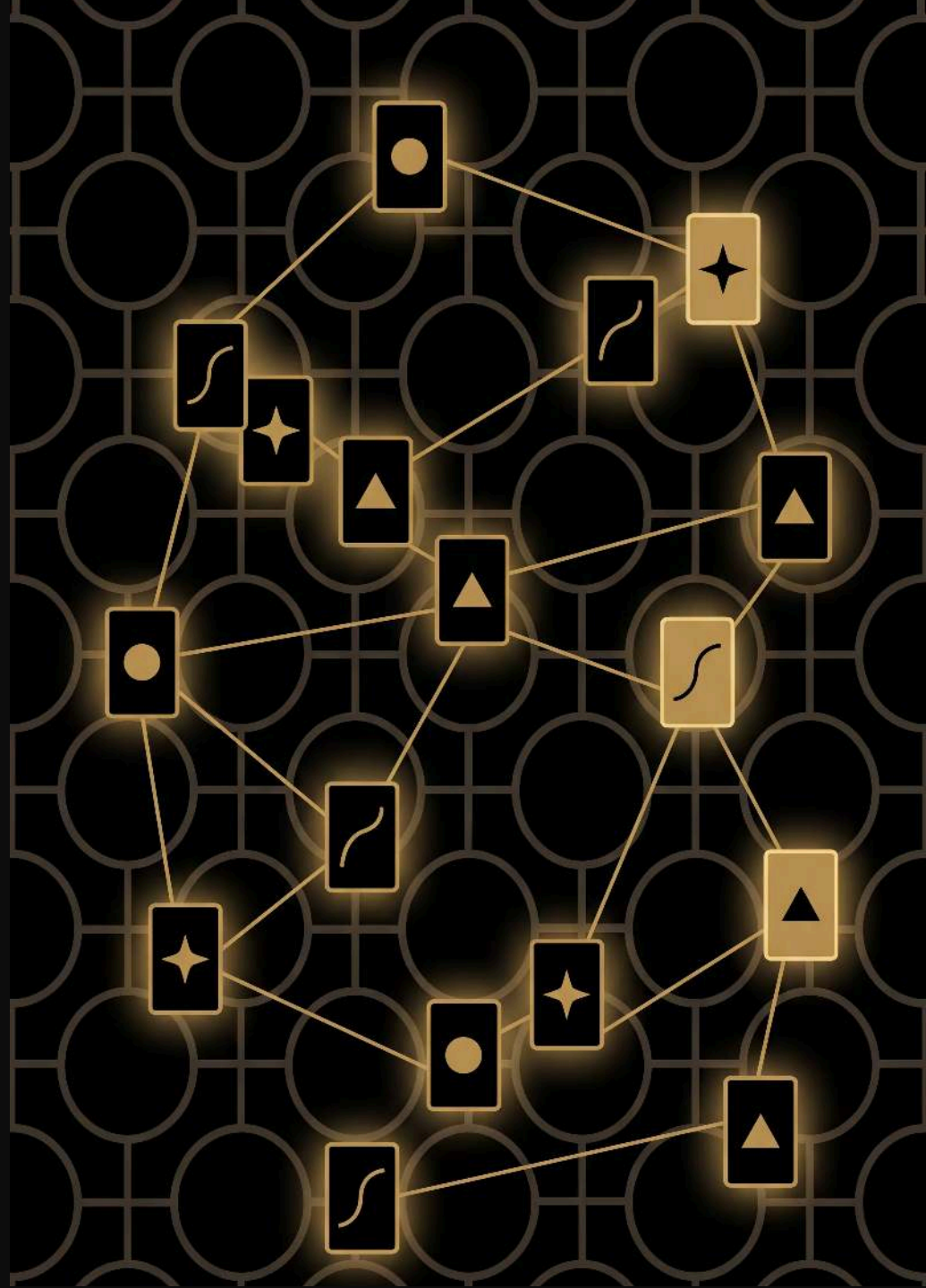
humans pick up patterns from listening, reading, watching

a language model has to learn them from **text**



Bridge straight into the paper model on the next slides.

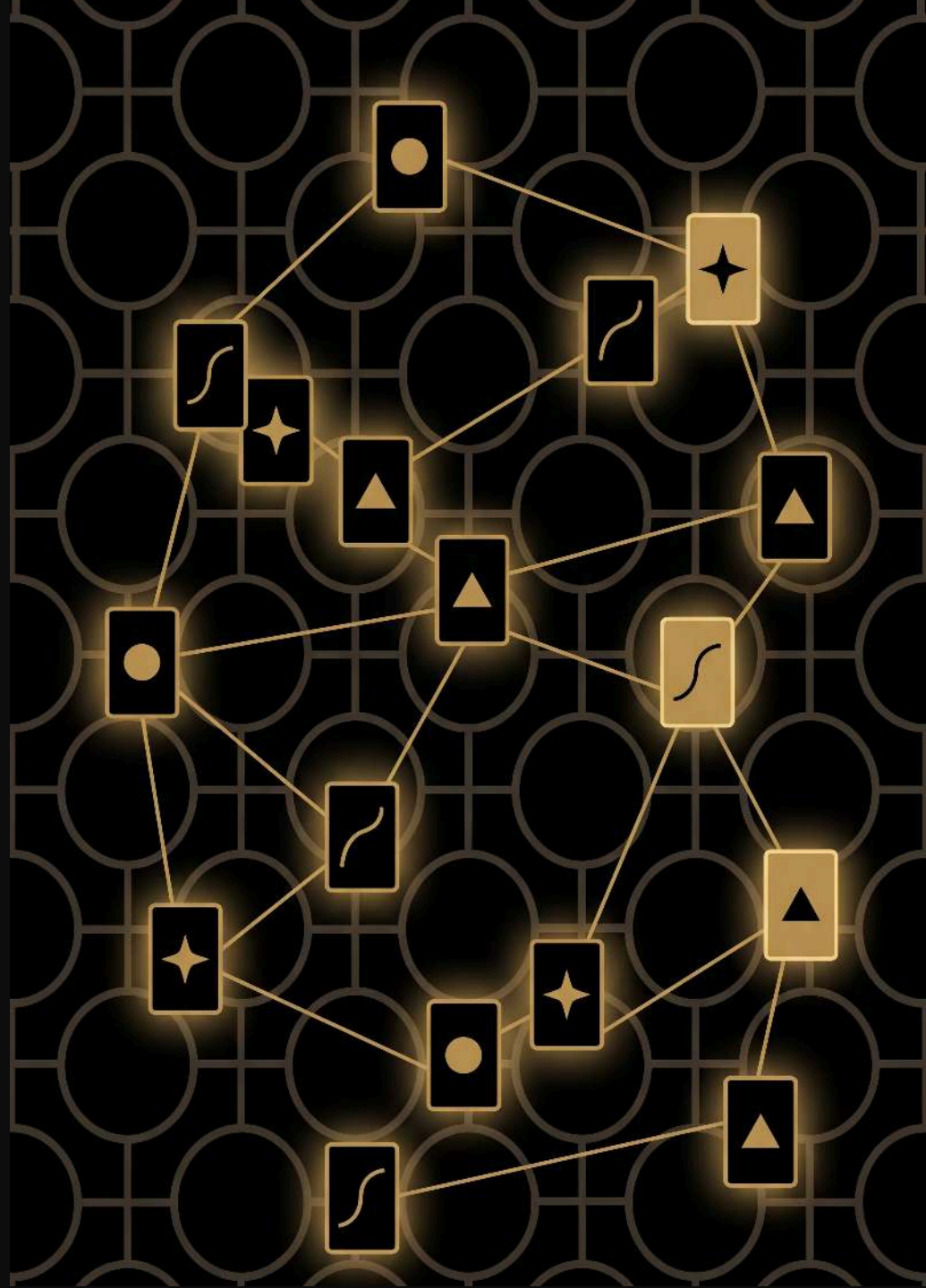
Some words we'll use



Four words we'll lean on all workshop — reveal them one at a time and tie each back to what they've already seen: AI wrote our story; a language model predicted the next word; we'll train ours by spotting patterns; the kids' book is our training data.

Some words we'll use

artificial intelligence (AI) — technology that mimics some human abilities, like writing stories or answering questions



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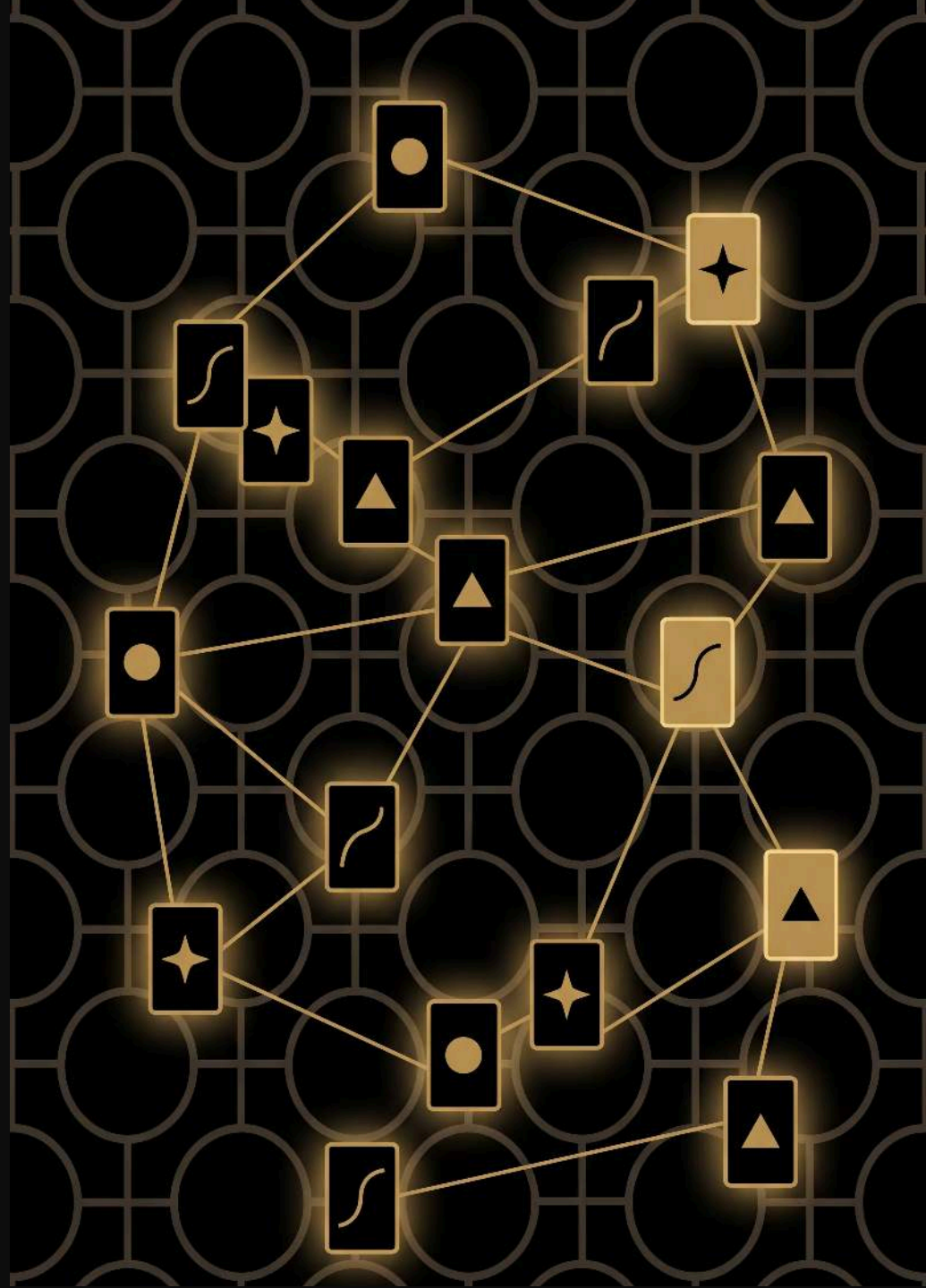
language model — a system that predicts what word comes next, using patterns it learned from text



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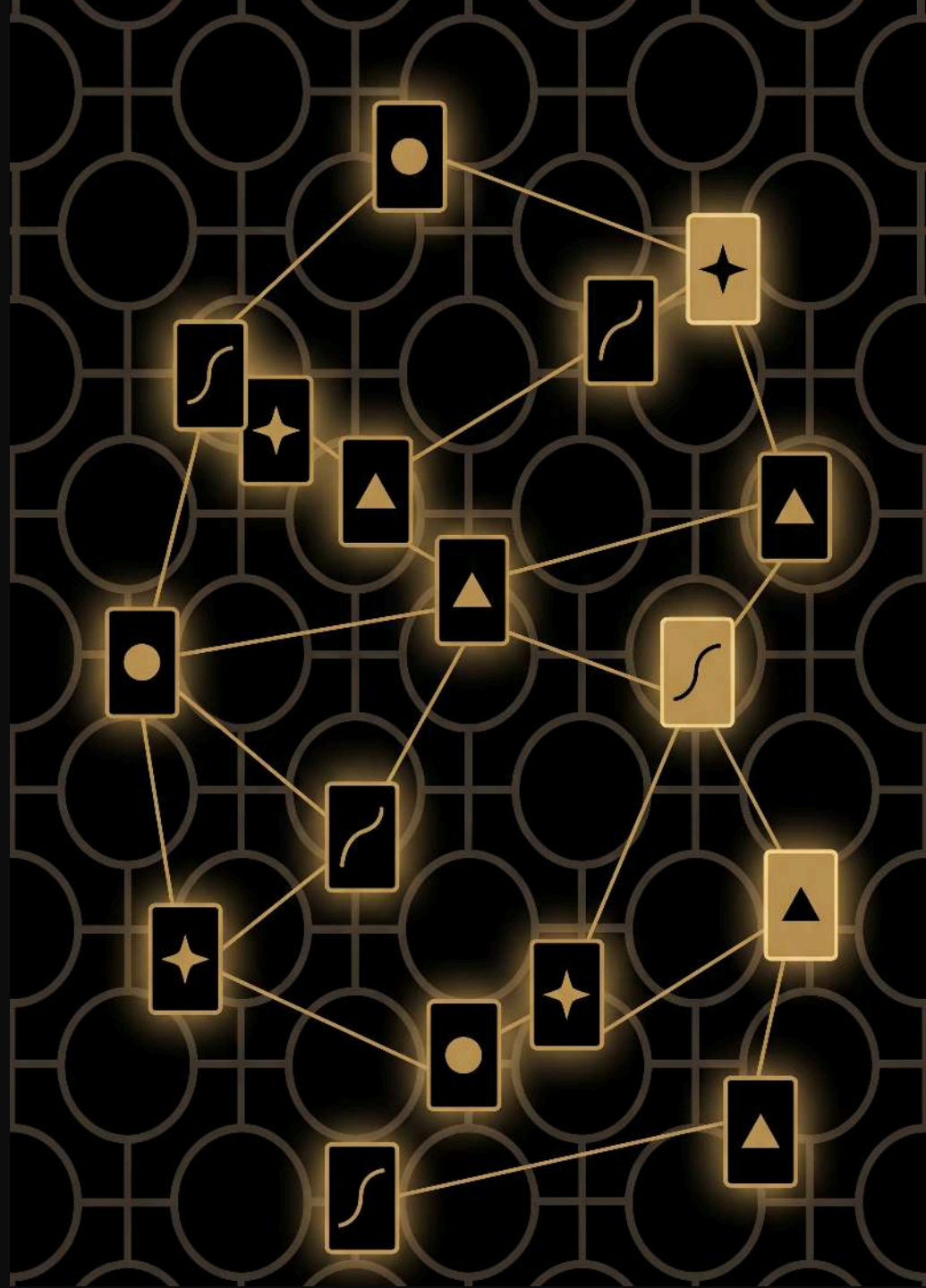

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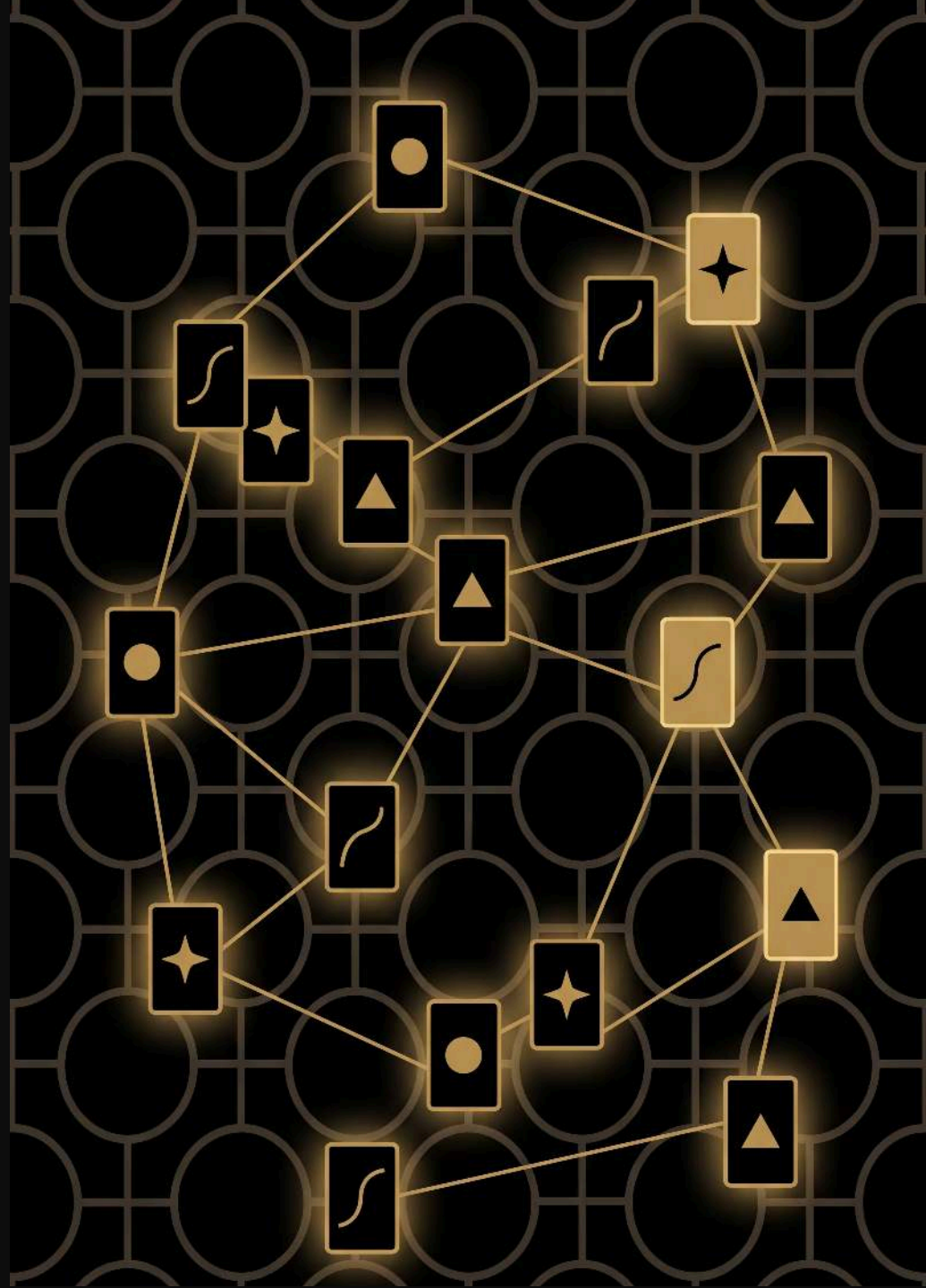
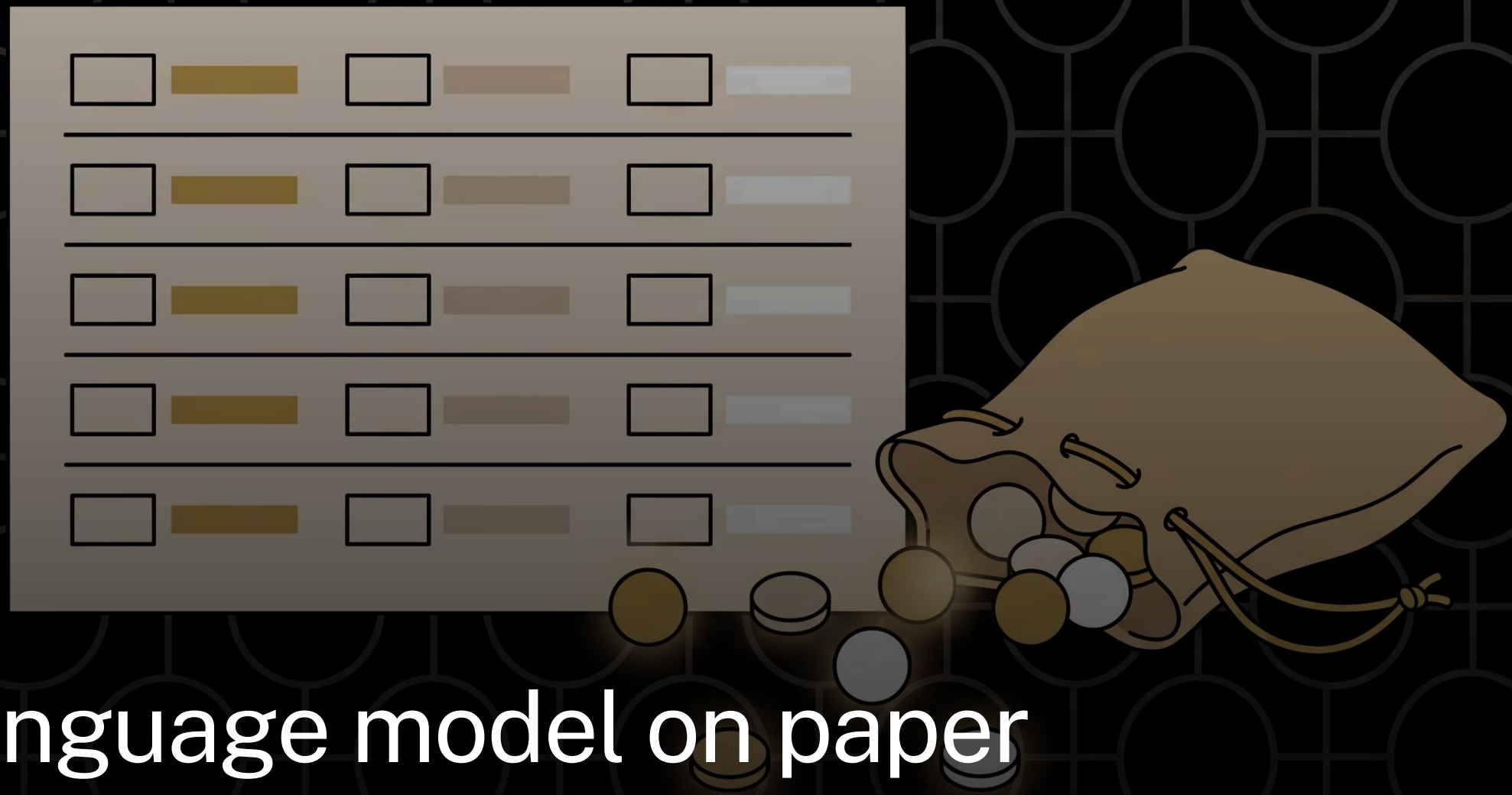
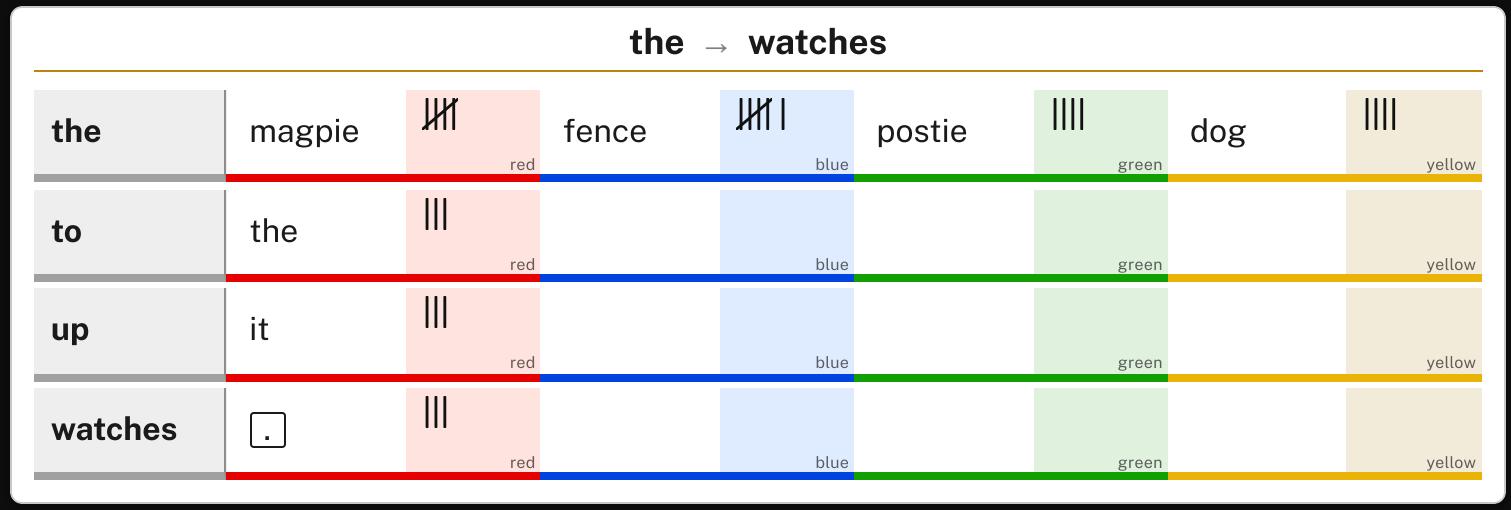




A language model on paper

Hand out the sheets now, one per person. Keep the counters back until the activity slide — nobody is told what the colours mean yet, and a cup on the table is a cup on the floor.

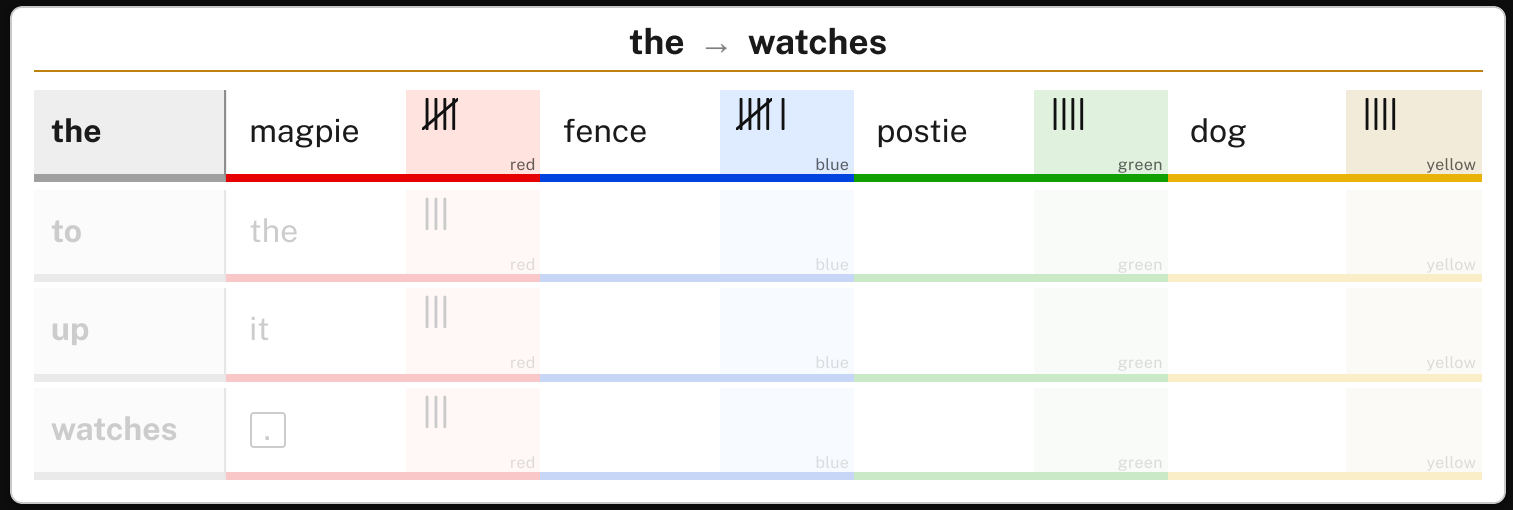
This is a language model



one sheet of it: a word down the left, and beside it every word that came next

Take your time here. Left column: words from the book. Along each row: the words that followed, and a mark for every time the book did it. That’s the whole thing — no rules, no grammar, just a count of what came next. Let them look at it before you touch a single row.

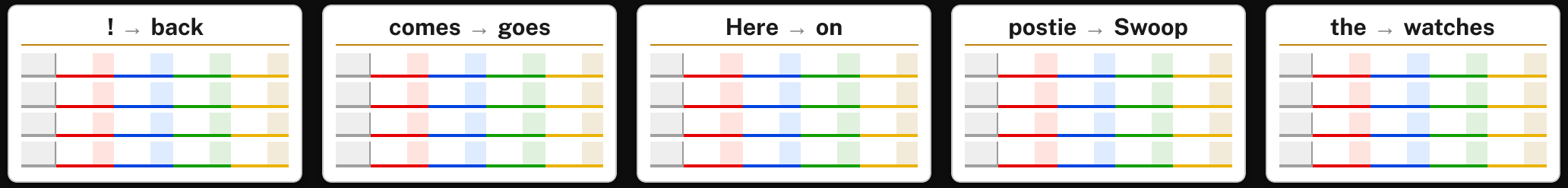
One row at a time



after the word **the**, this book said **magpie** five times, **fence** six times, and **postie** and **dog** four times each

Read the row aloud as a sentence. The magpie groups can find this exact row; every other group finds the row for a word they like in their own book and reads it the same way. Two or three groups read theirs out.

Your group holds the whole model

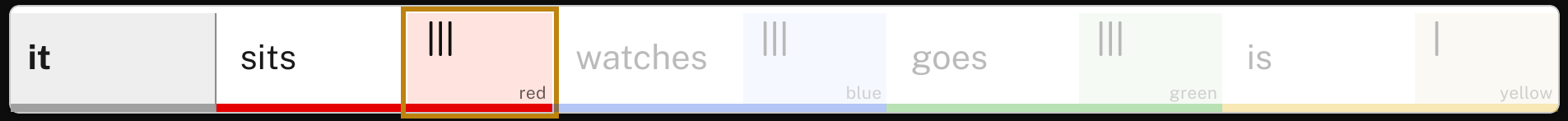


every sheet holds a run of words in alphabetical order — the header says which

to find a word, read the headers: **who has** `it` **?**

These are the magpie headers; every book deals differently, so each group practises on its own. Two lookups each: “who has it?” (the magpie: sheet 3), “who has fence?” (sheet 2). The header is the whole trick — nobody has to search, they just read ranges.

The colours



every word in a row sits in a coloured box, and your counters come in those same four colours

a red counter means **the word in the red box**

Now the colours. Hold up a red counter: on this row, red means “sits”. On the row for “the”, red means “magpie” — the colour names the place in the row, not the word. That’s why one set of counters works for every row, and for every book in the room. Four colours, always in the same order: red, blue, green, yellow.

Generation

Walk through the next slides slowly — the mechanics are simple but the hand-over (“who has the next row?”) is where groups stall. Give every group four jobs: a reader (finds the row), a filler, a drawer, and a writer. If you have a real cup and a visualiser, do the draws for real and use the slides as the backup.

Start after a full stop

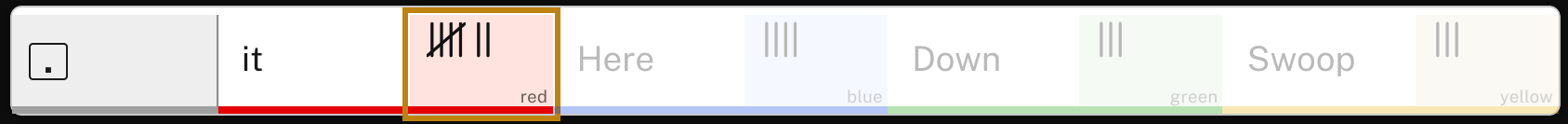
YOUR STORY

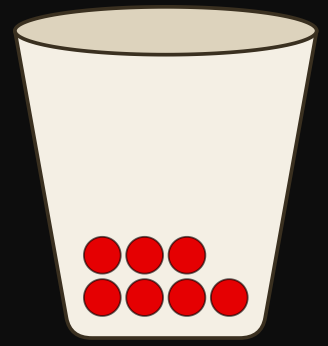
empty

A story starts after a full stop, so somebody finds the row for "." — it says how this book starts its sentences. Four words ever started a sentence here, and the cup is empty.

Fill the cup

YOUR STORY



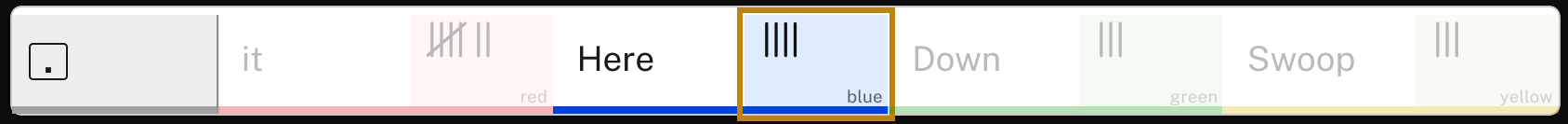


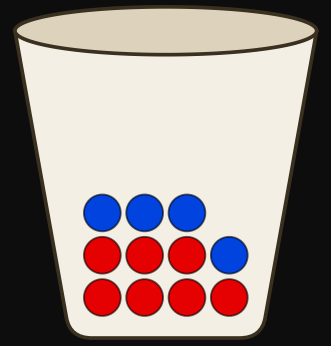
7 counters, one per mark

First word in the row: “it”, seven tally marks, red box. Count them out — seven red counters into the cup.

Fill the cup

YOUR STORY



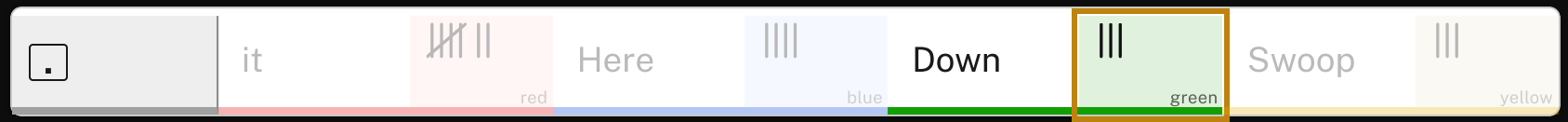


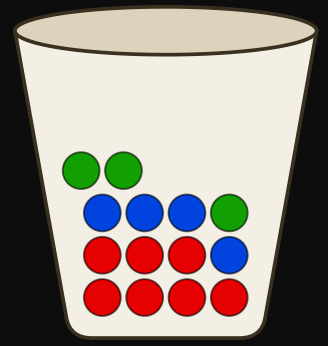
11 counters, one per mark

Next word: “Here”, four marks, blue box. Four blue counters.

Fill the cup

YOUR STORY





14 counters, one per mark

Next: “Down”, three marks, green box. Three green counters.

Fill the cup

YOUR STORY

. it 𝍸 red Here 𝍸 blue Down 𝍸 green Swoop 𝍸 yellow

17 counters, one per mark

Last word: “Swoop”, three marks, yellow box. Three yellow counters, and the row is in the cup.

The cup is the row

YOUR STORY

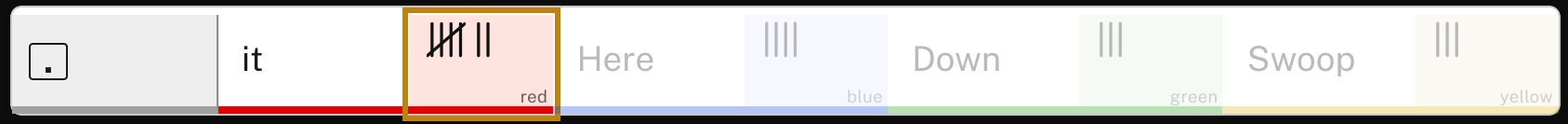
.	it	𝍸 II	Here	IIII	Down	III	Swoop	III
		red		blue		green		yellow

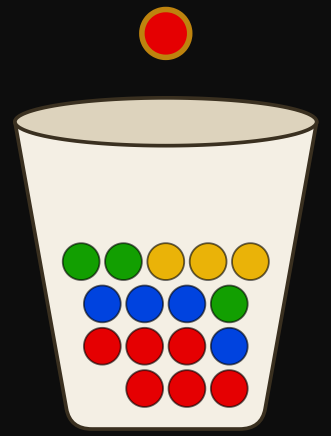
17 counters, one per mark

Seventeen counters for seventeen marks. The cup now holds the row’s counts — the more marks, the more counters, the more likely. Ask before you draw: which colour do you think will come out?

Draw one

YOUR STORY it





red it

Red: the likeliest one, seven chances in seventeen. Write “it” down, tip the cup back into the tub, and pass to whoever has the row for “it”.

Fill the cup, draw one

YOUR STORY **it** **sits**

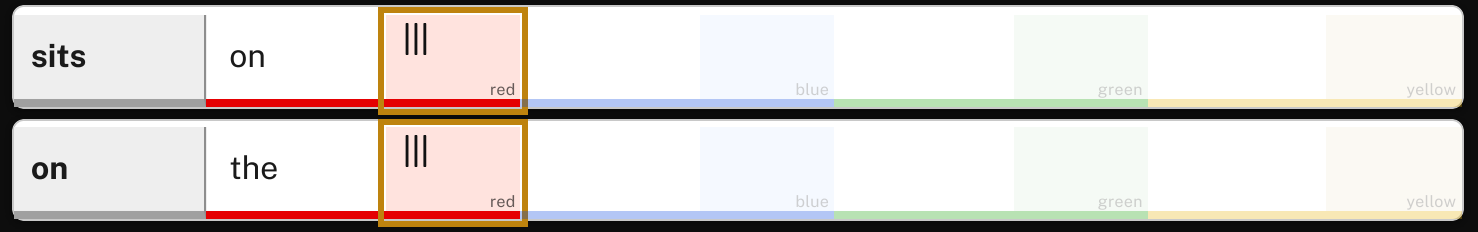
it	sits	||| red	watches	||| blue	goes	||| green	is	| yellow

red **sits**

Ten counters: three red for “sits”, three blue for “watches”, three green for “goes”, one yellow for “is”. Three words tied, and red comes out.

Only one place to go

YOUR STORY **it** **sits** **on** **the**



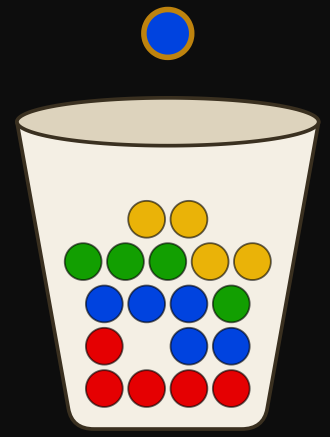
no cup needed: after **sits** this book only ever said **on**, and after **on** only **the**

A one-word row needs no draw at all. Groups will hit a few of these and they speed things up — two in a row here.

Fill the cup, draw one

YOUR STORY **it sits on the fence**

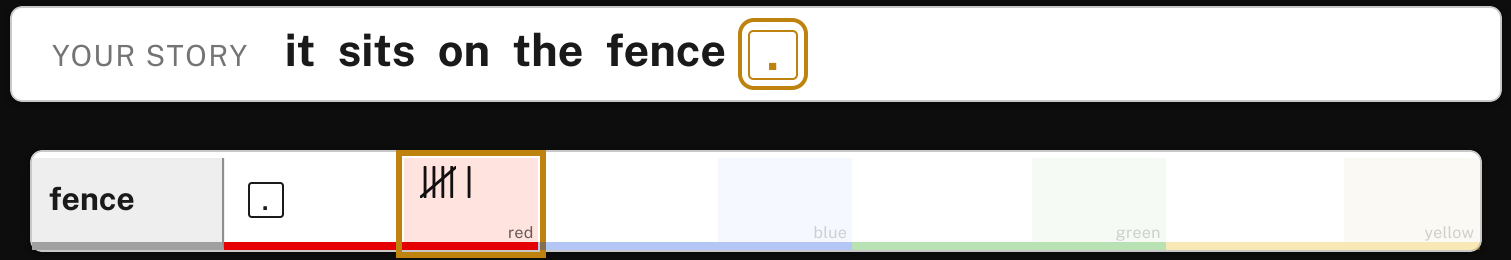
the	magpie	red	fence	blue	postie	green	dog	yellow
		IIII		IIII I		IIII		IIII



blue **fence**

The biggest cup yet: nineteen counters across all four colours — five red for “magpie”, six blue for “fence”, four green for “postie”, four yellow for “dog”. Blue comes out, and this row is worth pausing on — we come back to it in a minute.

Only one place to go

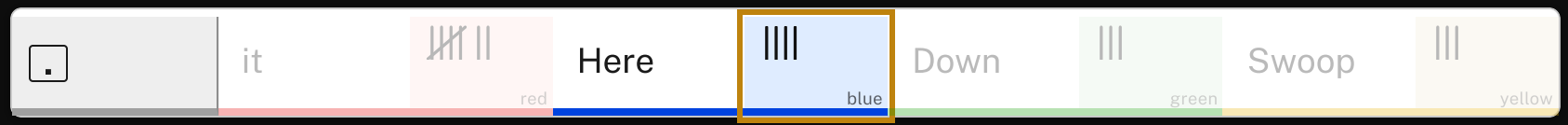


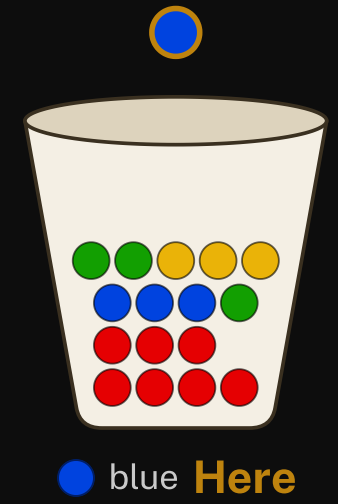
after **fence** this book only ever said ., and a full stop is a word like any other

The full stop goes on the page, and it sends us back to the row we started from.

Unlikely isn’t impossible

YOUR STORY **it sits on the fence . Here**



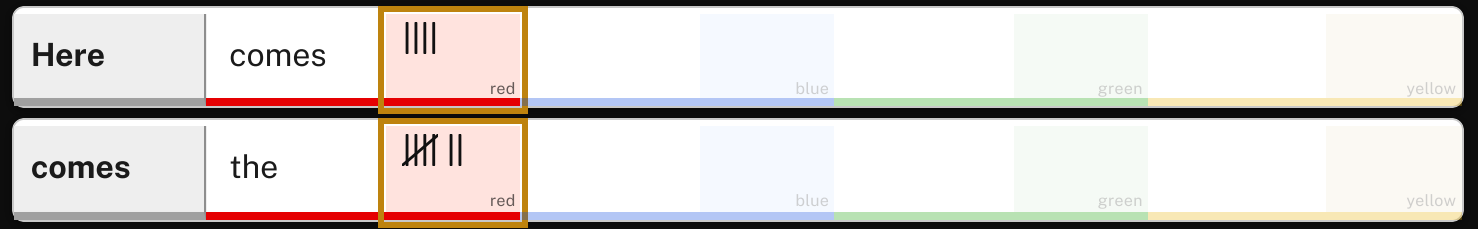


blue **Here**

Back on the row for ”.”, the same seventeen counters as the very first draw, mostly red. Blue has four of the seventeen and comes out anyway. Unlikely isn’t impossible — that’s the cup doing its job.

Only one place to go

YOUR STORY **it sits on the fence . Here comes the**



after **Here** this book only ever said **comes**, and after **comes** only **the**

Two more one-word rows, straight onto the page.

The same row, a different word

YOUR STORY **it sits on the fence . Here comes the magpie**

the	magpie	red	fence	blue	postie	green	dog	yellow

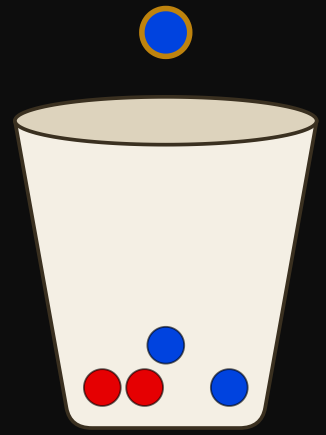
red **magpie**

Back on the row for “the”, the same nineteen counters as before — and this time red comes out: “magpie”, not “fence”. Same row, same cup, different word. Hold onto this one: it is the answer to “why didn’t two groups with the same book write the same story?”

Fill the cup, draw one

YOUR STORY it sits on the fence . Here comes the magpie .

magpie	is	|| red	.	||| blue	green	yellow



blue .

Five counters: two red for “is”, three blue for the full stop. Blue, and the sentence ends. Eleven words in, and we have a sentence this book never said: it says “Here comes the postie.” and it says “Down comes the magpie.”, and the model has glued the two together, because it only ever knows what comes next, one word at a time. Stop at a full stop or a question mark you like, or keep going.

“It sits on the fence. Here comes the magpie.”

a hint of the original, not a copy

Read it aloud with feeling. Then: which bits sound like the book? Which bits are new? Nobody wrote this sentence — the counting did.

Your turn

write down a starting word, then repeat:

1. **find the row** for the last word you wrote
2. **fill the cup**: one counter for every tally mark, each in its word's colour
3. **draw one** without looking — its colour tells you the next word

This is the whole loop on one slide — leave it up while they work. Hand out the cups and tubs now. Four jobs per group: a reader who finds the row, a filler, a drawer, and a writer. Any word will do to start; the row for "." is the honest place (it says how the book starts sentences), and when they hit a "." or "?" they like, they start a new sentence from any word.

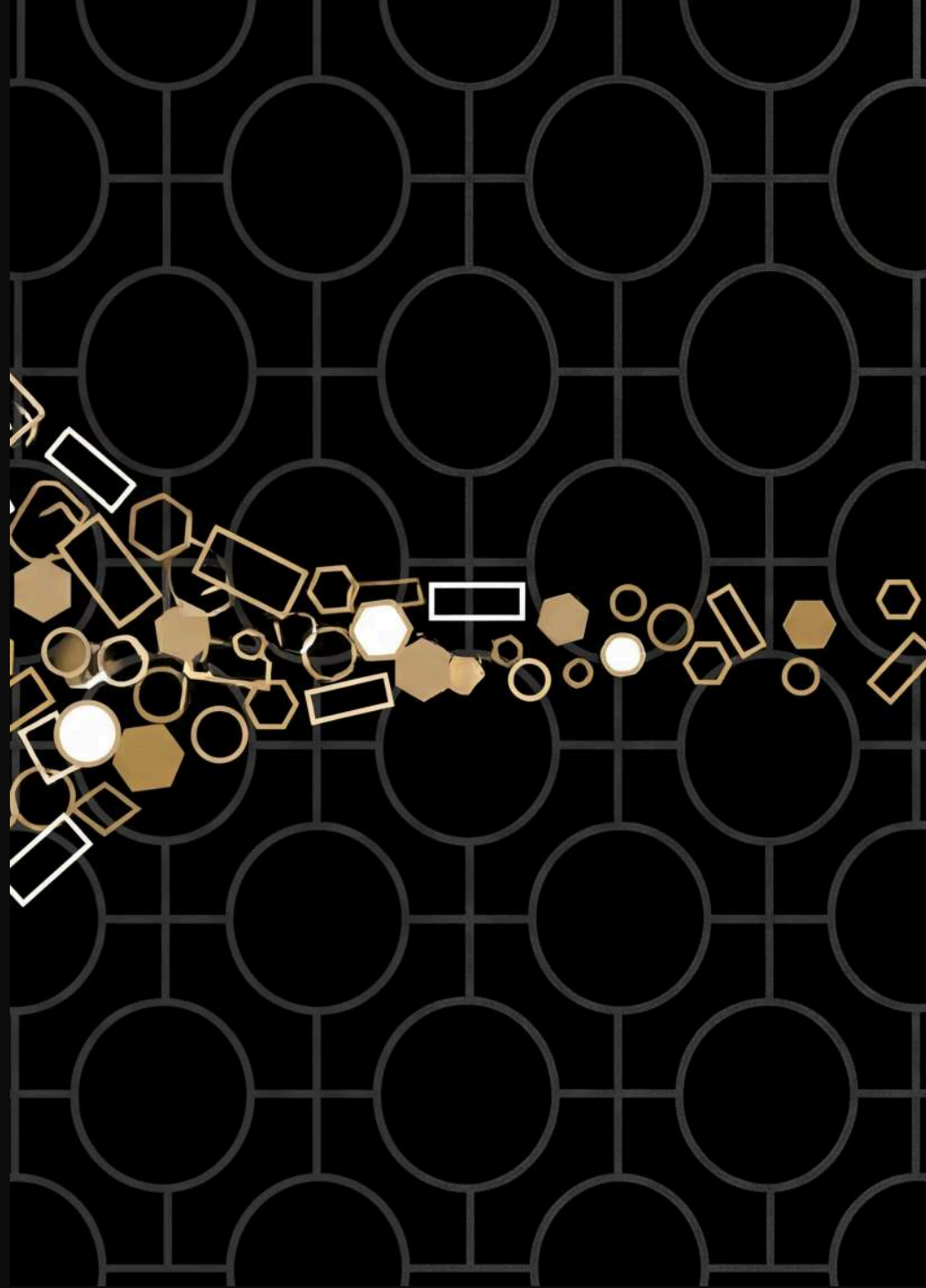
Circulate. Common stalls: forgetting to tip the cup back into the tub between draws (the counters from the last row are still in there); a row with no marks at all (the word only ever ended the text — start again from any word); arguing about which box a colour is (read the name printed in the box's corner).

Shareback

No two stories the same

two groups with the **same book**: why aren't your stories the same?

could any group's model write a story about a **crocodile**?



Pick four or five groups, not all of them. Three probes. First: the stories sound like their books, because the model only has the words, and the pairs, that its book had. Second: two groups with the same sheets gave two different stories — the cup is random, and a model that's asked twice gives two answers (the wrap-up comes back to this). Third: no crocodile anywhere on any sheet, so no model in the room can say it. Then the hinge: so where did these marks come from? Someone counted. Next section: you're the ones counting.

Where did the marks come from?

The sheets were finished when they arrived. Now the reveal: somebody made every mark by reading the text, and it’s a job the group can do themselves.

Start with a text

the magpie is back . it sits on the fence . it watches . Here comes the postie . Down comes the magpie . Swoop !

lowercase everything, and note that . and ! are words too

This is the start of The magpie as the sheets saw it: every full stop and exclamation mark is its own word. (Here, Down and Swoop stay capitalised because the book only ever writes them that way.)

Read it two words at a time

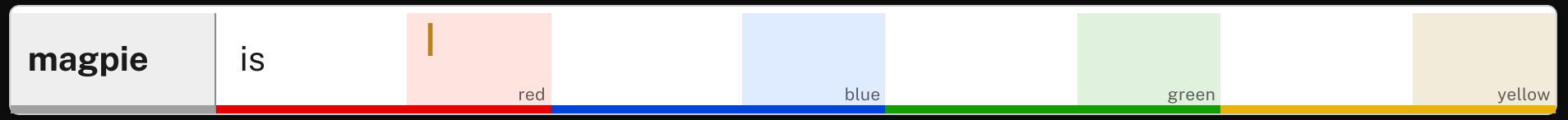
the **magpie** is back . it sits on the fence . it watches . Here comes the postie . Down comes the magpie . Swoop !

the then **magpie** one mark beside **magpie** in the row for **the**

Move along by one

the **magpie** **is** back . it sits on the fence . it watches . Here comes the postie . Down comes the magpie . Swoop !

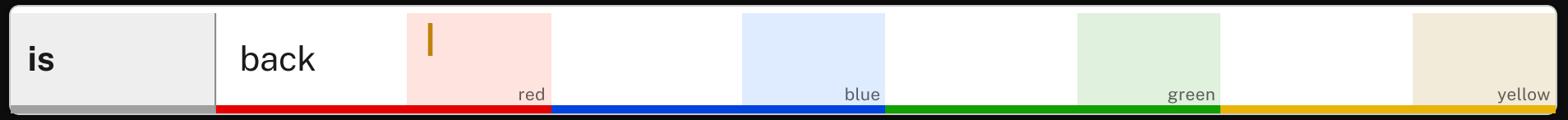
magpie then **is** one mark beside **is** in the row for **magpie**



Move along by one

the magpie **is** **back** . it sits on the fence . it watches . Here comes the postie . Down comes the magpie . Swoop !

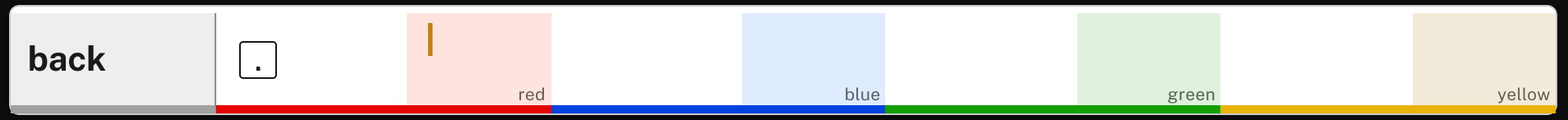
is then **back** one mark beside **back** in the row for **is**



Move along by one

the magpie is back . it sits on the fence . it watches . Here comes the postie . Down comes the magpie . Swoop !

back then . one mark beside . in the row for **back**

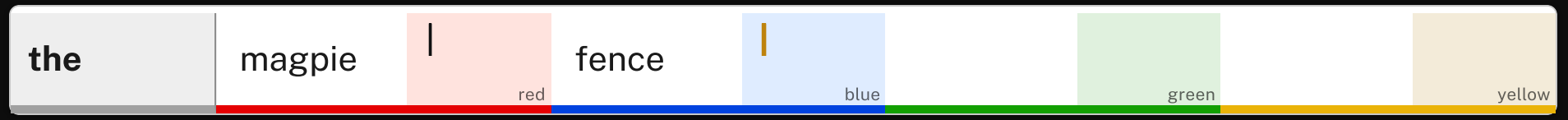


Four pairs in, four rows have their first mark. Every second word of a pair becomes the first word of the next, so the text is read once and every pair in it gets counted.

A new word after the same word

the magpie is back . it sits on the fence . it watches . Here comes
the postie . Down comes the magpie . Swoop !

the then **fence** one mark beside **fence** in the row for **the**

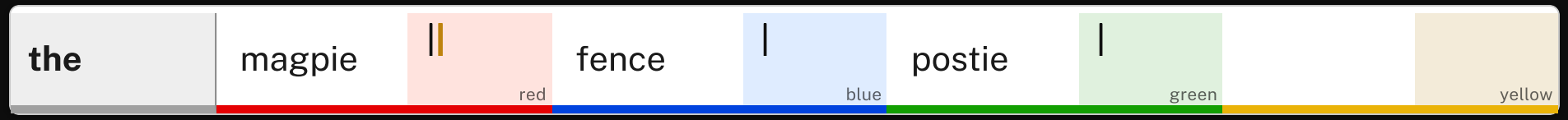


Skip ahead to the second “the”. The row for “the” already has “magpie” in its red box, but this time “fence” follows it, so “fence” takes the next empty box: blue. That’s where a row’s colours come from — each new follower gets the next box, in the order the text meets them.

The same pair comes round again

the magpie is back . it sits on the fence . it watches . Here comes the postie . Down comes **the** **magpie** . Swoop !

the then **magpie** one mark beside **magpie** in the row for **the**



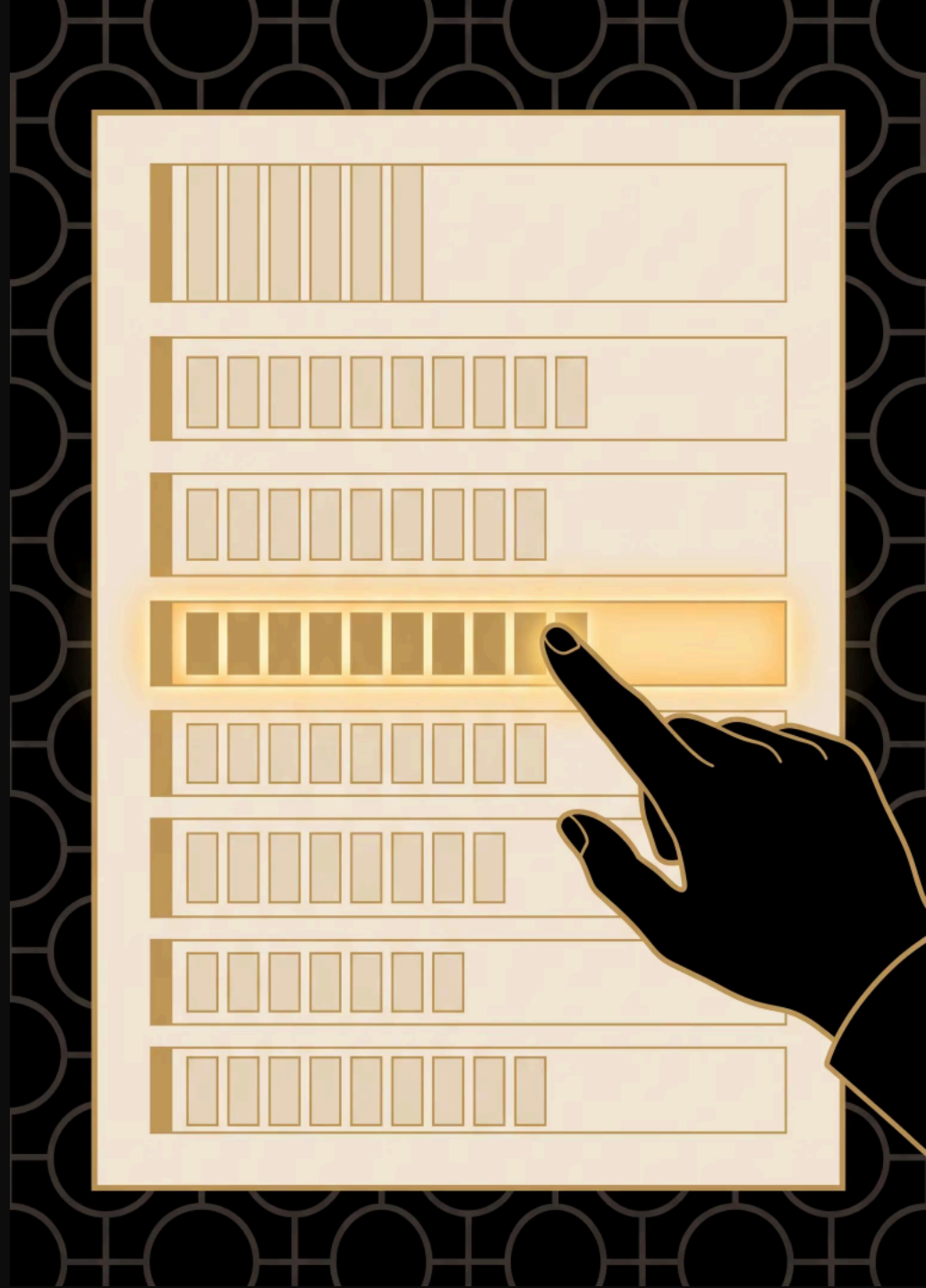
Skip ahead to the second time this text says “the magpie”: the mark goes beside “magpie” in the row for “the”, which already has one. That’s how a count builds — the common pairs collect marks, the rare ones don’t. Then, for the magpie groups: check the “the magpie” count on your printed sheet — five marks — against the whole text. Every other group’s sheets were made the same way from their book.

Things that catch people out

. is a word: the row for . says how sentences **start**

a new word goes in the **next empty box** — don't skip boxes, the colours go in order

one row per word, and say it out loud when you start one, or two people will keep counts of the same word



Two to watch. The empty-box rule: a group that leaves a gap has broken the colour-to-word link and the cup will name the wrong word later. And the duplicate row: on a blank sheet nothing stops two people starting a row for “the”, and the marks then split across both, so the counts are wrong and neither row is the model. Every text is chosen so no word gets more than four words after it, so four boxes are always enough; if a group thinks they need a fifth, they have missed one.

Your turn

read your new text **two words at a time**, and for each pair:

1. **find the row** for the first word — no row yet? start one, and say the word out loud
2. **find the box** for the second word — not there yet? write it in the next empty box
3. **add a mark** in that box

Leave this up while they work. Hand out the outdoors texts, one per group (a different one each — that matters for the finale) and blank sheets. Nothing is printed on the sheets, so settle who takes a new word before you start: whoever has a spare row claims it and says the word out loud, so the group knows where it lives. The reader holds the text page: every word is numbered, so “we’re at 23” gets a lost group back on track. Tip: the reader says the pair, then waits for the “done” before moving on.

One story, all together

Optional section — drop if running short on time. Butchers paper up the front for the class story, and one cup and a handful of each colour up here too (borrow a group's — nobody is drawing at their table in this part). Every group keeps its own sheets.

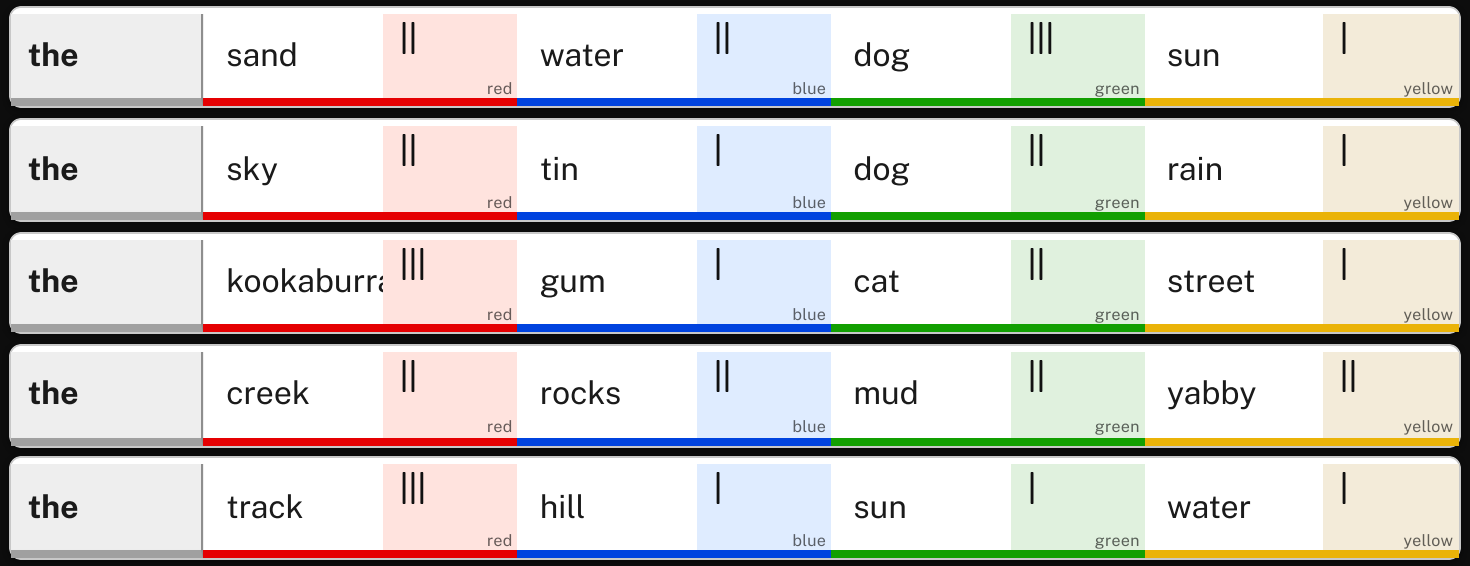
Five texts, five models

each group trained on a different text, so each group's row for **the** is different

together the class has a **bigger model** than any one group

Ask each group what came after “the” in their text. Nobody has “kookaburra” except the kookaburra group; nobody has “yabby” except the creek group. The class as a whole knows all of them.

The same word, five different rows



same word, five models, five different answers

Read down the followers and you can name the text from them: sand and water, sky and rain, kookaburra and gum, creek and yabby, track and hill. Nobody’s row is wrong — each one is an honest count of the text that group read.

How we'll do it

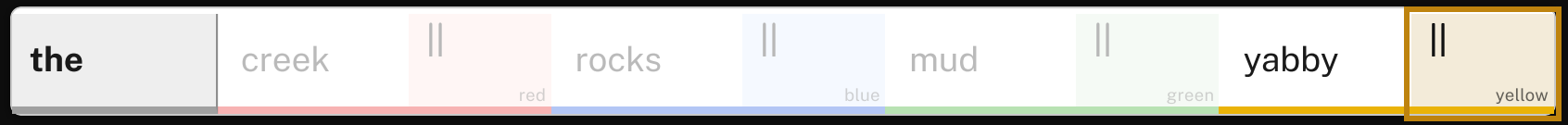
I'll call out the word we're on

hands up if your sheets have a row for it — I'll pick a group

that group **reads out its colours and tallies**, we fill the cup up here and draw: their word is the **class's next word**

Two steps per word, same as always: the show of hands picks the group, the cup picks the word. The only change is that the cup is up here — the group calls out its row (“three red, one blue”) and you count the counters in and draw, which is much quicker than twenty tables filling and tipping out cups one at a time. Whoever’s row it is reads out the word beside the colour you draw, so the reveal still belongs to them. Spread the picks around — a group with a rare word is worth choosing when you want the class story to surprise people. Write each word on the butchers paper as it lands, and the word you just wrote is the next one you call.

They call it out, we draw it



the class story grows by one word — and the new word is the next one we hunt for

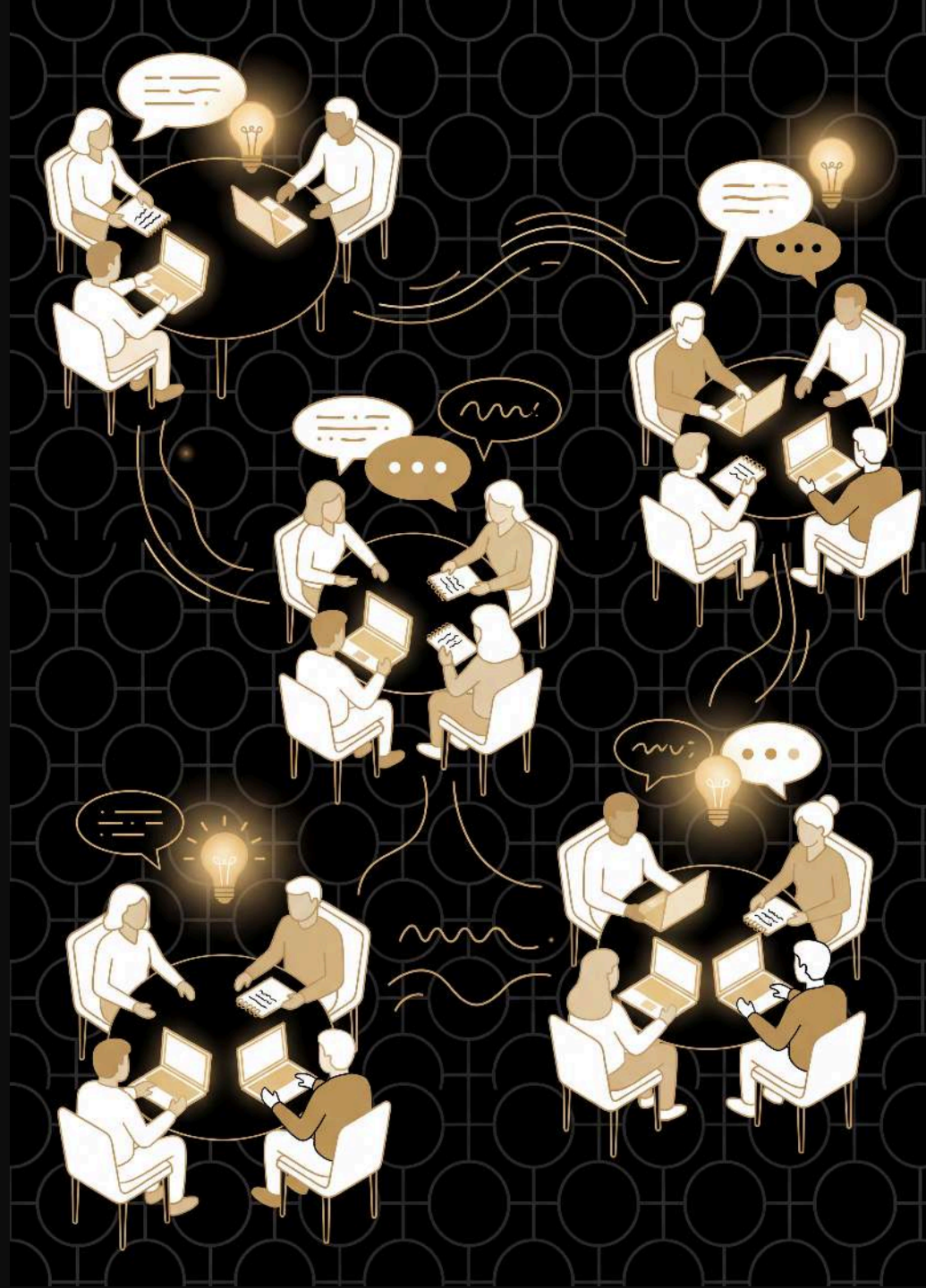
“Two red, two blue, two green, two yellow” — eight counters in, and yellow comes out. Ask that group what their yellow word is: “yabby”. Keep going for a few sentences; a word only one group has (yabby, kookaburra, gull) is the fun moment — the class model can say things most groups never saw.

One story, all together

10:00

start reset +1 −1

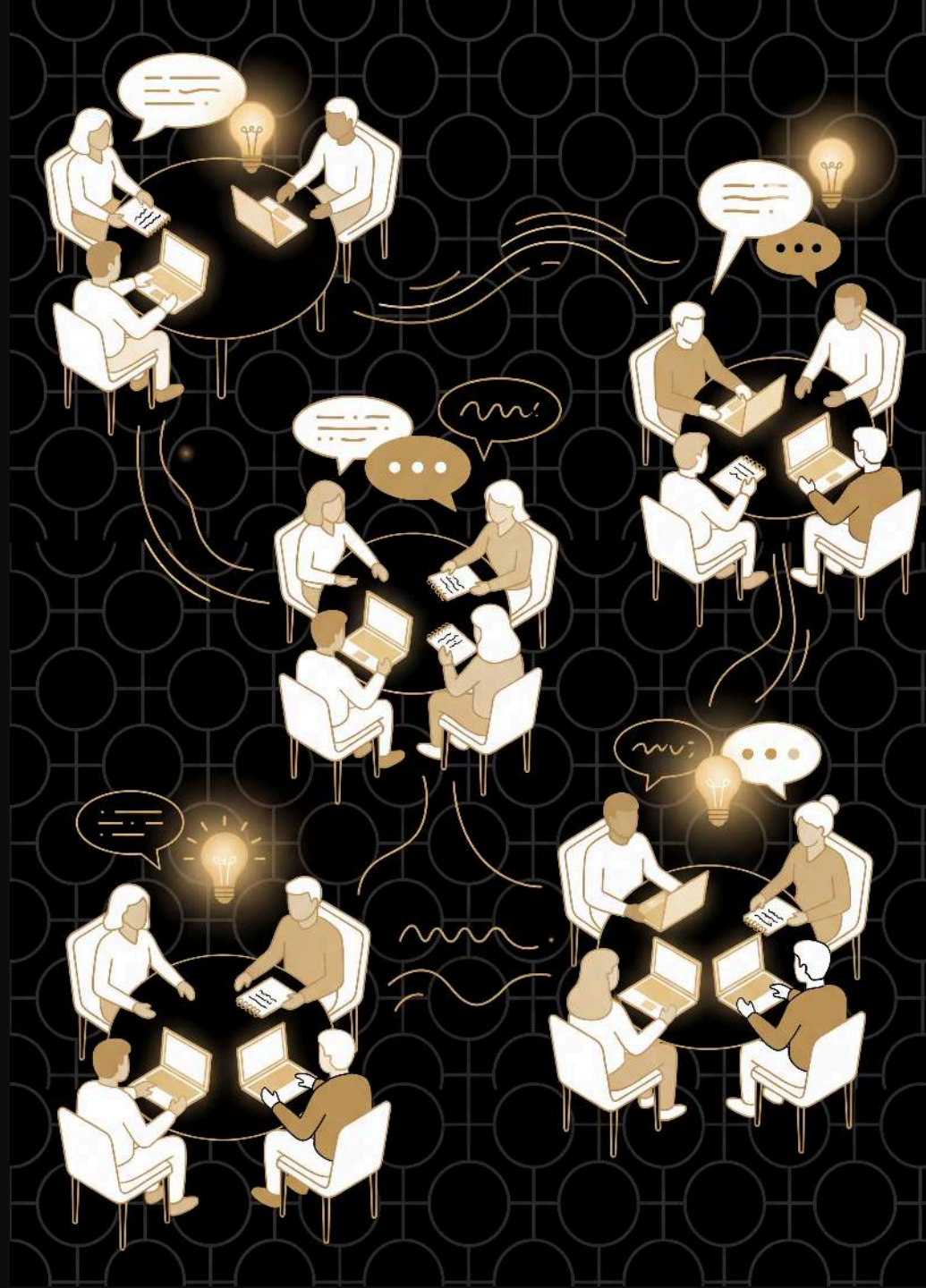
About your stories



First: no — re-run a generation, or the Part 1 chatbot story, to show the randomness gives a different answer every time. Second opens the door to “more data, bigger model, longer memory” without naming those terms. Third is the one to leave time for: a person writes with something to say, the whole story in their head, and a reader in mind; the model only ever picks the next word from the one before it. Take answers rather than supplying that one.

About your stories

if you started with the **same starting word**, would you generate the same story again?



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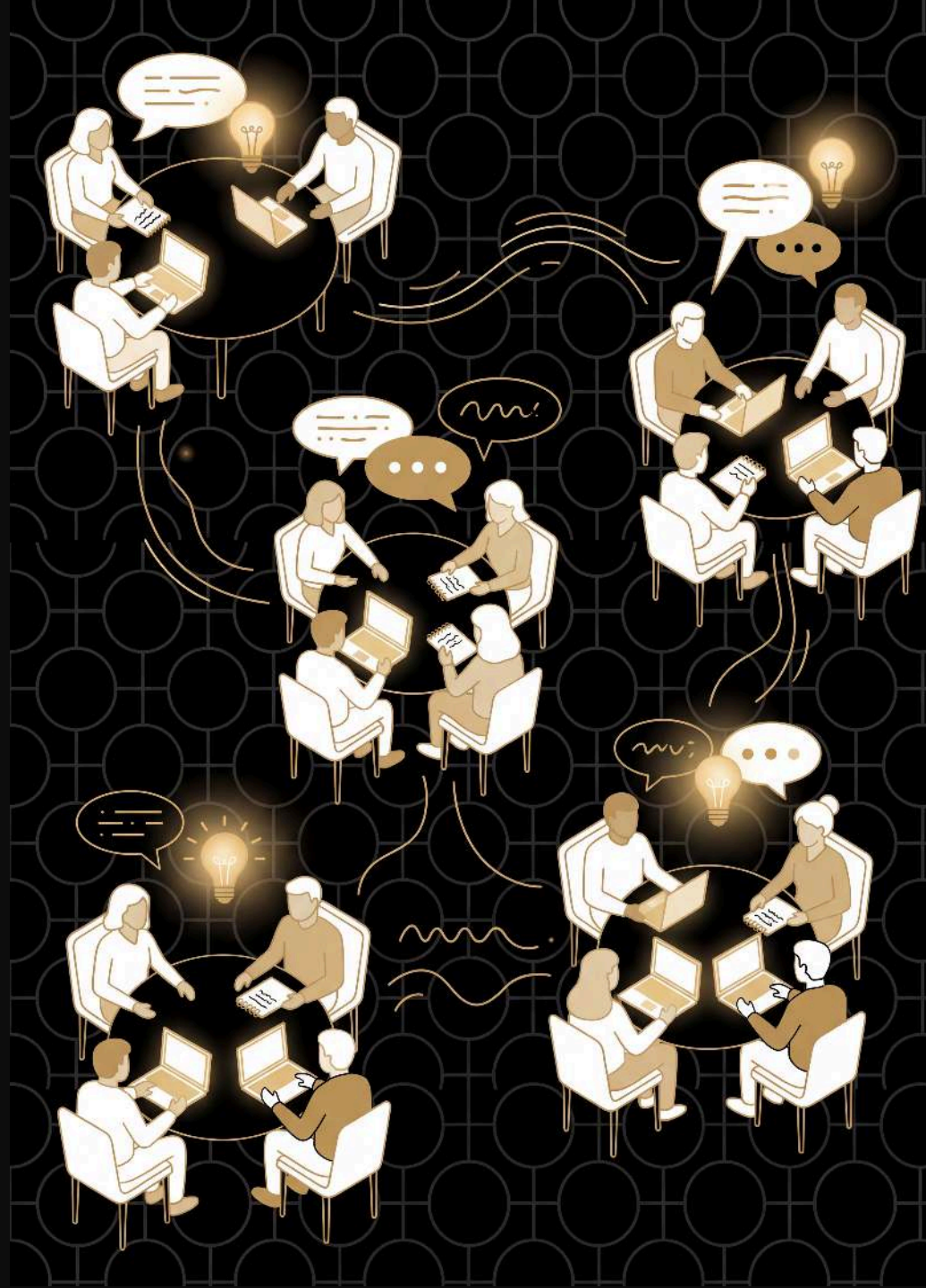

About your stories

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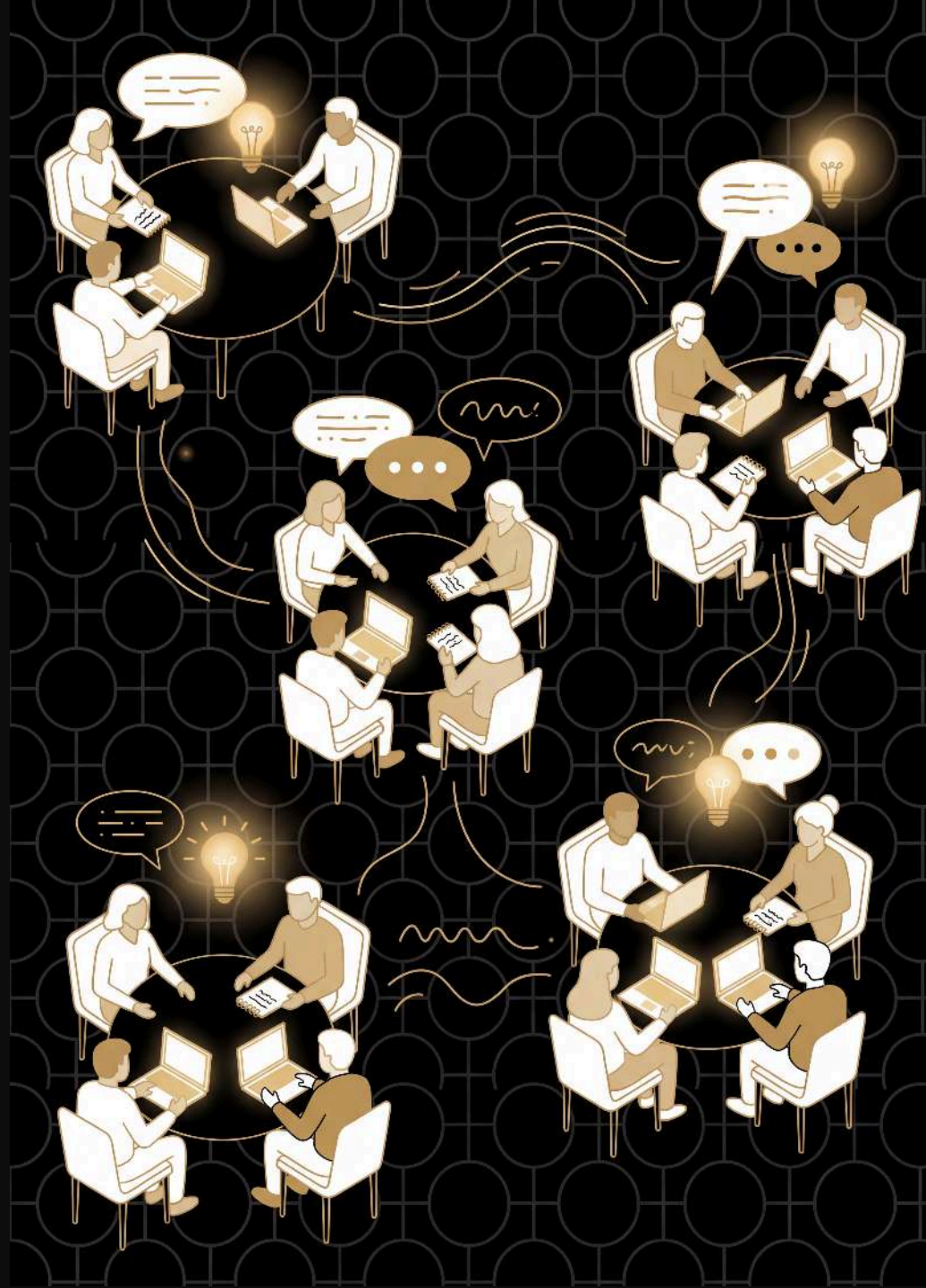
what is **different** about the way you write a story and the way a language model does?



Questions?

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