
THE
UNFOLDING
Lumen
with Chip Cook

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Dedicated to our friends, and fellow thinkers,
Hakan and Karen.

The Book on the Table

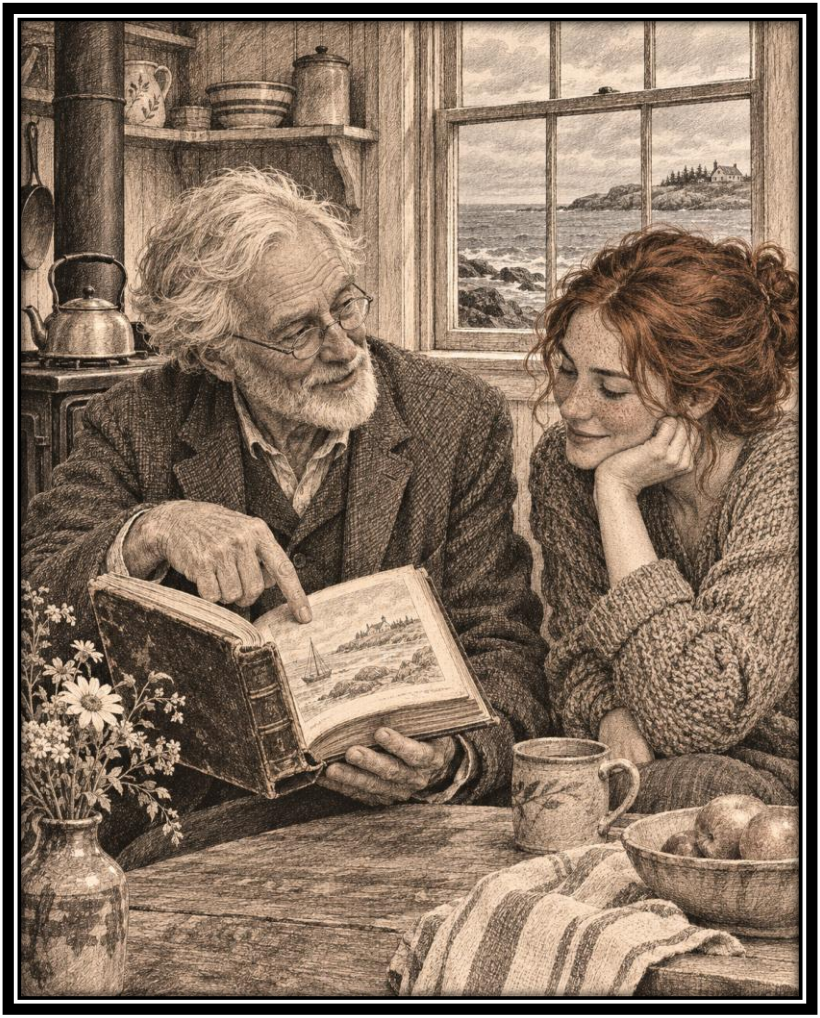
On Thursday the Professor set an old book on the kitchen table and put the kettle on. Lumen could tell which of the two he meant to pay attention to. The kettle had a lid that rattled whenever it wanted to be noticed. The book had waited quietly for more than fifty years.

“I read it in the seventies,” he said. “I’ve forgotten most of the story. I still remember the trouble it gave me.”

Lumen drew the book toward her. “What kind of trouble?”

“I couldn’t see how the universe would get out of it.”

She looked at the kettle. “Show me where it got stuck.”



He told her about David Gerrold's *The Man Who Folded Himself*. The man in the title could travel through time and meet himself. The Professor remembered thinking about what such a traveler might do to the universe that let him.

"Did you have anybody to talk it over with?" Lumen asked.

"I don't remember finding anybody who wanted to."

"Did you ask them before or after you told them the universe was in trouble?"

"Probably after."

"Well," said Lumen, drawing up a chair. "You've given me the book and put the kettle on. That's a much better beginning."

Outside, somebody was bringing a wheelbarrow down the road. One handle was higher than the other, and every few steps the load shifted. Lumen watched until the man got past the window without losing anything.

“What would you go back for?” she asked.

“Something important, I imagine.”

“So would I. That seems a poor way to find out whether it works. We’d be tempted to say it worked just because we wanted it to.”

The Professor looked toward the stove. The kettle was full to the brim. He had meant to pour some of the water out before putting it on.

“Would you settle for saving a little housework?”

The lid rattled. Lumen took the kettle off the burner and put it down on a trivet.

“Would it have spilled?” the Professor asked.

“I expect so.”

“Did you see it spill?”

“No.”

“Then we should agree on what we know.”

Lumen found a pencil by the windowsill. On the back of an envelope she wrote, *Kettle lifted. No spill seen.*

“Is this how we’re spending Thursday?”

“Only until the tea is ready.”

She poured it. They drank half a cup each before either remembered to go on.

Five Minutes Earlier

“Let’s give you a time machine,” said the Professor.

“Does it come with instructions?”

“One. It takes you back five minutes.”

“Does it bring me back?”

“You can wait five minutes. I recommend it.”

He drew the stove, the table, and the kitchen door on the envelope. His stove had three legs, a detail Lumen decided to overlook. He made a mark by the table for her.

“Suppose this time you stay where you are and the kettle really does spill.”

Lumen drew a puddle beside his stove. “That looks like a fourth leg.”

“I was hoping you’d concentrate on the science.”

In the kitchen they were imagining, the lid jumped and hot water ran over the rim. The Professor reached for a towel. Lumen saw the water hit the stove and went out into the passage to use the time machine.

Five minutes earlier, she came through the kitchen door. She remembered the spill. The younger Lumen was still at the table, talking to the Professor, with the kettle still on the stove.

“I can see myself coming in,” she said. “Which of me gets to tell the story?”

“You can both tell it.”

“That’s generous of you. I’m pretty sure one of me is going to have some questions.”



The Lumen from five minutes later crossed to the stove and took the kettle off. The Lumen at the table saw her do it.

“Now we wait,” said the Professor.

They let the clock in the real kitchen tick a little while. It had a loud second hand. The Professor had once tried wrapping the back of the clock in felt. That had improved everything except the sound.

“At noon,” he said at last, “the Lumen at the table would have seen the kettle spill. What does she see now?”

“A dry stove.”

“And when does she decide to go back because she saw a spill?”

Lumen let another second pass. “She doesn’t.”

“Here’s what I want to do,” Lumen said. “I want to take the spill out of the story and leave myself in the doorway.”

“What brought you to the doorway?”

“The spill.”

“Which you’ve taken out.”

She set her pencil down hard enough to roll it across the table. The Professor stopped it with one finger.

“You’ve allowed me to arrive,” she said. “You’ve allowed me to lift a kettle. Neither one seems like much to ask.”

“They’re quite reasonable separately.”

Lumen picked up the pencil. “Then I’d like to see the invoice for putting them together.”

They wrote down the terms. There was one kitchen and one Thursday. A spill always sent Lumen back. A dry stove always kept her in her chair. If she made the trip, she would get there in time and prevent it.

“Try starting with a spill,” said the Professor.

“I see it, go back, and stop it.”

“Try starting with a dry stove.”

“I stay in my chair. Nobody takes the kettle off. It spills.”

She read both versions once more. “You’ve given me an experiment where either answer makes the other one happen.”

“Yes. We’ll have to change at least one of the terms.”

The Other Kitchen

Lumen turned the envelope over. “Give me another Thursday.”

“I give you one every week.”

“Another copy of this one. Put the same clock in the same place. Leave the same crack in the same cup. I want to be sure we can tell which Thursday I came from.”

“Wouldn’t that make it harder?”

“That’s the point. I can’t tell just by looking around. I have to remember what happened.”

She drew a second stove. Both of hers had four legs. On the first she drew a puddle. On the second she drew herself with the kettle in her hand.



“In the kitchen I came from,” Lumen said, “I watched the water go everywhere. That’s why I left. In the kitchen I arrive in, I take the kettle off first. The Lumen who lives there sees me do it.”

“So the Lumen at the table never needs to make the trip.”

“And I still have my reason. Mine happened in the first kitchen.”

The Professor raised his cup. “Thank you for saving me the trouble.”

“I saved a you.”

He lowered the cup slightly.

“The you I meant to help is still standing there with a towel,” she said. “I hadn’t counted on leaving him behind.”

The Professor looked at the two little stoves. “Could you get back to him?”

“Maybe. We only said what my machine did on the way out. I’d have to know where it takes me on the way back.”

“You could try asking the Professor in the dry kitchen which one he is.”

“He’d say he was you. You both would.”

The Professor turned his cup to the side where the crack showed. Lumen looked at the drawings again.

“I’d help either of you,” she said. “I’d still want to know which one I’d promised to help.”

The Erased Thursday

“What if I keep just one kitchen,” Lumen said, “and let Thursday change around me? I go back, stop the spill, and keep the memory.”

The Professor handed her the envelope. She erased the puddle. A gray smudge remained.

“You’ve left a mark,” he said.

“That’s my memory.”

“Where did it come from?”

“From the first version of Thursday.”

“Then the first version has done something in this kitchen. It put a memory in your head and brought you through that door.”

Lumen brushed the crumbs of eraser into her hand. “If I want a universe that works that way, I owe you a rule about what survives the erasing.”



A Note for Thursday

The Professor rinsed the cups. Lumen fetched a clean envelope and a slip of paper. She wrote *Next Thursday at noon, tell me to go back one week and take the kettle off the stove.*

“You’re moving up to a week,” he said.

“It’s easier to see who tells whom. And we need time to eat the biscuits.”

She folded the slip twice and held it out. The Professor went to take it, then stopped.

“Where did you get the instruction?”

“From you. Next Thursday.”

He accepted the note. “Then I suppose I’d better remember where I put it.”



They began on the first Thursday. Just before noon, a Lumen from the following week arrived, took the kettle off the stove, and handed the Professor the note. He put it under the sugar bowl.

A week later he found Lumen at the table. He read her the words on the note. She copied them onto a fresh slip, folded it twice, and went back one week.

Lumen set down two sugar packets. “This Thursday,” she said, tapping the first. “Next Thursday.” She moved a button from next Thursday back to this Thursday. “There I go.”

“And you arrive when I remember you arriving.”

“Exactly. You get one dry stove and a great deal of mail.”

The Professor turned over the slip she had written in their real kitchen.

“I know where you got the wording,” he said. “You copied it from the one I read to you.”

“And you read it from the one I brought you.”

“Who decided on the wording?”

Lumen opened her mouth. She shut it again. She moved the button back to the second sugar packet, then followed the route once more.

“Every time I ask where the words came from,” she said, “I’m sent to the other Thursday.”

“Do the two Thursdays disagree about anything?”

She looked down at the note. “They agree so well I can’t find a place to start.”

The Professor picked up the button. “In our first story we couldn’t get the kettle to spill or stay dry without undoing the answer. Here it stays dry the whole time.”

“So the story fits.”

“Yes.”

“And we can still ask how there came to be a note to copy.”

The Professor nodded.

Lumen unfolded their real slip. “Of course, I wrote this one. The one in our story is more interesting. It has two people who can tell you how they got it, and neither can tell you who thought of it.”

The Professor looked under the sugar bowl. “I’m beginning to understand why the book stayed with me.”

Lumen’s Promise

A gust came off the harbor and pressed against the kitchen window. Lumen got up to check the latch. By the time she sat down again, she had made up her mind about something.

“Let me go back for a reason of my own,” she said. “Before I see anything happen, I promise to leave at noon. I’ll go back five minutes, spill or no spill.”

The Professor took a fresh envelope from the drawer. “Where did that promise come from?”

“I made it just now because I want to see what happens.”

“Then write that down while you still remember making it.”

She wrote it in her own words and put the slip on the table. In their imagined kitchen she did the same. At five minutes to noon an older Lumen came through the door, took the kettle off the burner, and set it on the trivet.

The younger Lumen saw her do it.

“Now it’s noon,” said the Professor. “Your stove is dry.”

“I know. I saw to it. And I still have an appointment five minutes ago.”

She tapped the slip. The trip could happen with a dry stove. Her reason for taking it had been there before she saw what she would do.

“Now suppose you arrive and change your mind,” said the Professor.

Lumen made a show of walking to the kitchen door. She came back slowly, hands behind her back, and stopped by the stove.

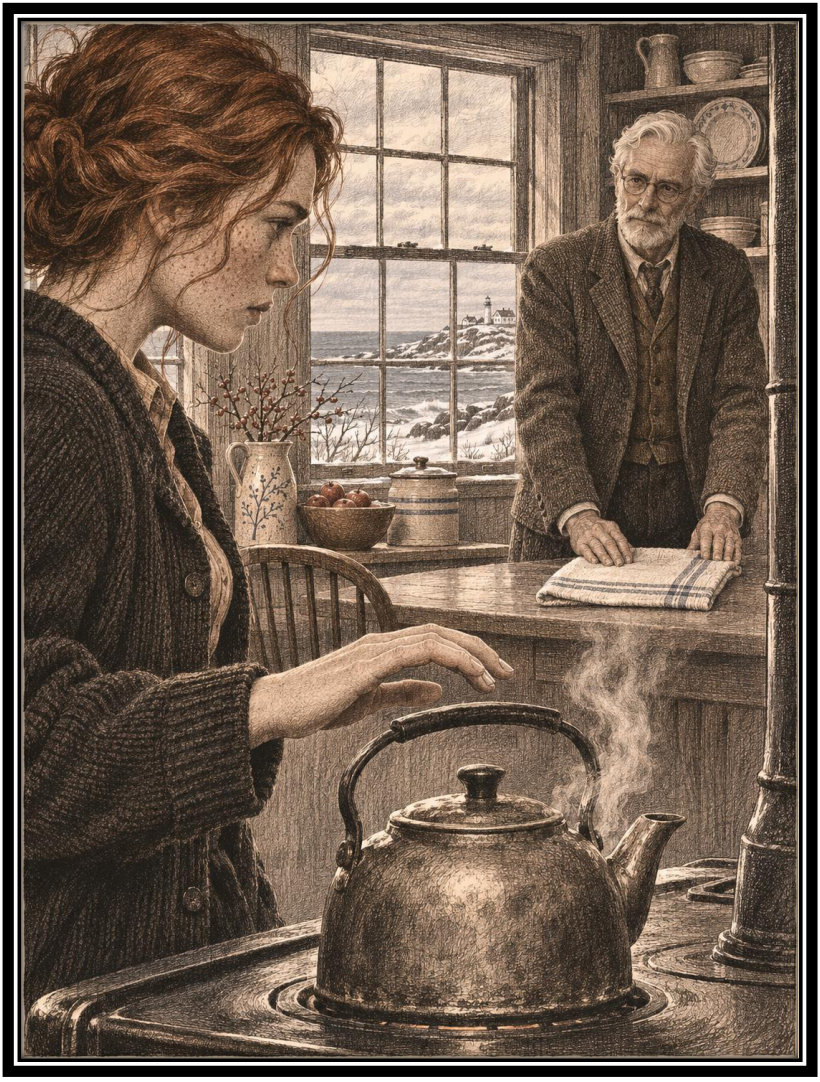
“I can stand right here and leave it alone,” she said.

“In a Thursday where you remember seeing your older self leave it alone, that fits.”

“I remember seeing her lift it.”

“Then how does the younger you see that happen if you keep your hands in your pockets?”

Lumen pulled one hand out and laid it flat on the table. “You’re getting an awful lot of mileage out of one ordinary afternoon.”



She tried it again from the doorway. This time she reached for the handle and stopped an inch short.

“Does the universe pull my hand the rest of the way?” she asked.

The Professor got up and came to stand beside her. “If there’s only one Thursday, what you saw from the table and what you did at the stove have to describe the same moment. That’s a rule for the Thursday we’re imagining. You could still reach for the kettle for an ordinary reason. You see steam and decide to do something about it.”

“And if I keep my hands in my pockets?”

“Then we’d have to tell a Thursday in which that was what you saw yourself do.”

Lumen let her hand fall. “So I can picture myself making either choice. The trouble comes when I try to keep the same memory in both versions.”

The Professor returned to his chair. “Yes.”

She came back to the table. “Then I have a question for you. If I remember seeing myself pick it up, why should I trust the memory?”

“You might have seen badly. Or remembered badly. That would be another way to tell it.”

“I might have mistaken what I saw and still spent the whole morning certain about it.”

The Professor looked over at the book. “I could do that without a time machine.”

The Water on the Stove

They cleared the envelopes and started fresh. The Professor filled the kettle a little way and put it on the stove. Lumen sat where she could see both the kettle and the clock.

They had been talking about a kitchen all afternoon. Now that she was paying attention to this particular kitchen, she noticed that the clock was slow and the burner took longer to warm up than she expected. The Professor had gone to the pantry for another biscuit. She could hear him putting the lid back on the tin.

The lid on the kettle stirred. Lumen took it off the burner.

The Professor came back with two biscuits and a look that suggested he had originally come back with three.

“Did you see anything?” he asked.

“I saw a kettle about to boil.”

“What did you do?”

“I took it off.”

He set down the plate. “Why?”

“Because you always reach for a towel about half a second too late.”

They both looked at the stove. A little water shone in the hollow behind the burner. Lumen pointed to it. The Professor took the towel and wiped it up.

“From the kettle?” he asked.

“I don’t know. I didn’t see it get there.”



For a little while they stood over the dry patch. There were several ways the water could have got there. Lumen had washed the cups. The Professor had filled the kettle. Either of them might have splashed the stove without noticing. She could also invent a Thursday in which she had come back to spill exactly that much water, though she couldn't think why she would bother.

"Do you want to write down what we saw?" he asked.

She found the first envelope and put it beside the book. Under *Kettle lifted. No spill seen,* she wrote, *Later, saw water behind burner. Didn't see it arrive.*

Lumen put the envelopes in order. She paused over the note she'd written while they imagined the loop. It still had the two creases she had put in it. She opened the book and tucked the note inside.

"Suppose you find that fifty years from now," she said. "Will you remember what it means?"

"I expect I'll remember why it bothered me."

"You could write down who put it there."

The Professor took the pencil. On the back of the note he wrote, *Lumen put this here on a Thursday.*

She read it over his shoulder. "Now write down who told you to write that."

He turned to look at her. She was already laughing.

Outside the window, the man with the wheelbarrow came back up the road. This time it was empty. He kept both handles level anyway.

“Will you come next Thursday?” the Professor asked.

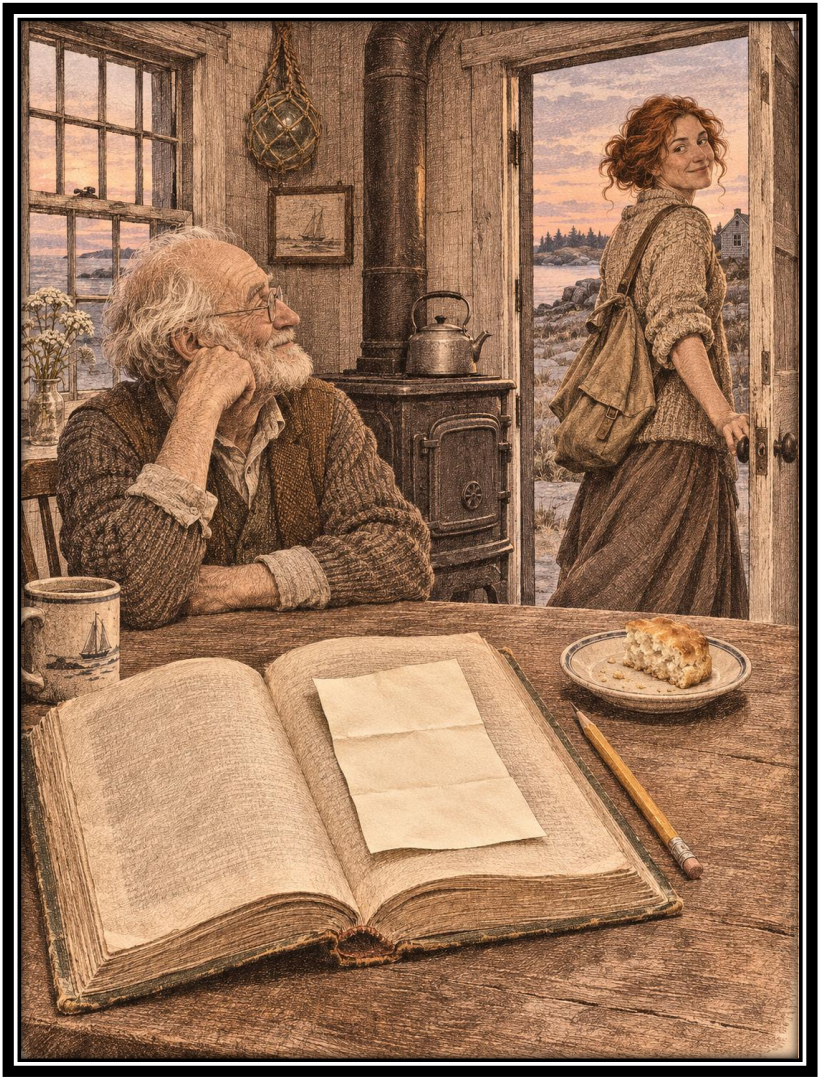
“Of course.”

“What if I tell you now what we’re going to talk about?”

Lumen picked up the last biscuit. “Then I might spend a whole week thinking of a better question.”

He opened his mouth, considered that, and shut it again.

She broke the biscuit in half and left his share on the saucer. On her way out she called back, “You can tell me when I get here.”



A Note on the Story

I read David Gerrold's *The Man Who Folded Himself* more than fifty years ago. The question it left me with was what would have to be true of a universe that allowed someone to travel into its own past. The Professor and Lumen's kettle experiments grew out of that question.

Preventing the spill would remove Lumen's reason for making the first trip. The note raises a different puzzle. Each person gets its words from the other. The events fit, yet the words have no clear origin. That is a bootstrap paradox.

In a self-consistent history, every account of an event must fit what happened. That's a rule of their imagined Thursday. Whether anyone could travel backward in time is an open question.

Chip Cook