

Hands Against Entropy

The second law of thermodynamics says that the entropy of the universe always increases, that these increases are spontaneous, irreversible, and that everything — heat, light, bodies — drifts toward disorder unless energy is spent to resist it. *Popo* was that energy.

She worked in the back corner of a *cha chaan teng*¹ where the floor was always wet and the air always sweet with a mix of Hong Kong-style milk tea and roasted sesame oil. Metal pitchers clanged against the counter; a cook shouted for pineapple buns; someone drained noodles with a rattle that sounded like coins. Among all that chaos, *Popo's* 4'8" frame was elbow-deep in steaming water, forearms red and shiny, skin across her knuckles looking like paper that had been left in the rain. She scrubbed until the bowls came back the color of bone. She scrubbed until the knives dulled and the rags frayed.

Popo would come home carrying the smell of fryer oil and that rose-scented dish soap they sell by the gallon. She would then hang her shirt on the balcony, steam lifting from the fabric into the night, the scent drifting through the rooms until it settled in the curtains. With those same hands, she'd lift my fingertips to the window and tell me to put them at an angle so they could catch the light.

"Look," she'd say, tracing the whorls with her work-glossed thumb. "Pretty, ah. Study hard. Keep like this."

I didn't know the marks we rely on could be polished away.

In physics class, I learned that no transfer of energy is free. The energy gained by one system is the loss of another. *Popo's* hands were the cost of her resistance to disorder. Years of water, detergents, and scrubbing abrade friction ridges; chemicals swell then dry the skin; the stratum corneum thins. Little by little, the ridges that tell the world who you are can smooth out.

¹ A Hong Kong style café or diner

I learned what that meant in an immigration line.

The officer took our passports first, then our hands. I pressed my index finger to the glass and watched my ridges bloom on his screen: a neat gray spiral, like a snail shell. *Popo* stepped up after me. The officer said, “Right index, ma’am,” slower and louder, as if volume translated languages. *Popo* pressed. He frowned. “Harder,” he demanded, and she leaned in, petite but stubborn, pressing until her shoulder trembled. The screen stayed gray and blank, like a television with the sound off.

He took her hand and angled it himself, rolling from nail to nail. “Again.”

There was still nothing to take.

I had believed fingerprints were proof that biology stamped each person with a pattern so the world would know we existed. Standing there, I realized that you could spend yourself into a mark you could no longer leave.

Popo came with me to move into my dorm. She folded T-shirts into tight rectangles and slid oranges, one by one, into my top drawer, “so you remember to eat fruit.” She placed a Jade Tower in the southeast-most corner of my room, and smeared Tiger Balm under my pillow. When she left, the room smelled faintly medicinal, like a temple full of old wood.

For weeks later, we FaceTimed on Sunday nights. *Popo*’s squinted face filled the screen when the call connected, then immediately tilted out of frame. I learned the design of her ceiling fan very well.

“Aiya,” she’d say, voice grainy across a continent, “your room too messy! How you study like this?” She’d laugh, the camera shaking.

And I'd laugh too, because she couldn't see that, out of frame, the corner of the desk was already disciplined: notebooks stacked, pens in a row. The rest — laundry chair, open drawer, crumbs — wobbled toward chaos. Inside the frame, my small city held.

That summer, I worked in a research lab. In the first few days, I made the mistake of not wearing gloves, and we used 75% ethanol for everything — from washing samples to preserving specimens. I didn't notice my fingertips getting dry and irritated, but when I pressed them against the side of a beaker, my fingerprints didn't leave a mark. The ridges were there; the oils weren't. The surface was too clean to remember me.

I called *Popo* that night without waiting for a Sunday.

“Do your fingers hurt?” I asked.

She laughed. “Hurt? No, no. Just tired. Work too long, la.”

“How did they-” I couldn't find the word.

She nodded. “Go away, ah? Little bit every day. Hot water, soap, scrub-scrub. You no feel. Like sugar in tea, put inside, then finish, disappear.”

The next morning in the lab, I pulled on gloves and chose the steps that would cost less skin. Ethanol denatures proteins best with water present, stripping lipids from skin. So I learned to put on those gloves in the morning, wash the chemicals off my hands in the afternoon, and then moisturize at night. Order always came at a cost, but I could decide how much to pay.

These are things *Popo* insists on even now that she no longer works at the restaurant. In her apartment, she refuses the dishwasher. She soaks bowls in slow, sure circles. She shakes out bedsheets like flags until the corners fly square. “Cleaner this way,” she says, believing in what hands can do more than what machines promise.

Once, while I dried plates, I asked if it scared her — the scanner not recognizing her.

“I no need machine to know me,” she said. She tapped the center of my palm with a knuckle. “You know.”

I didn’t want to saint her. *Popo* could be sharp — she could slice onions and you with the same motion. She hid money in cereal boxes. She tore coupons off magazines like confetti and scolded me for leaving a light on (“Who pay electricity? The sky?”). Her resistance to chaos wasn’t gentle. It was practical, sometimes petty, always relentless. But I think about her hands: how they gave up their names to keep other people’s words clean, and how that exchange shaped mine.

Last winter, back home, I pressed my fingers to the apartment window and left a fog print, five soft ovals of breath. *Popo* came to stand beside me with a towel.

“Water mark,” she said, reaching to wipe it. Then she paused. My thumbprint, pearly with condensation, showed every ridge. For a second, the pattern was a map. For a second longer, it was hers — my spiral twinned into a ghost spiral I couldn’t see.

We waited. Heat bled from the glass to the air. The print faded. *Popo* finished the job, brisk and satisfied. The window turned clear, and through the clean square we had made, the city became clearer — bus brakes, a hawker calling the price of oranges, steam rising from a street-stall wok selling roasted chestnuts vanishing into the cold.

“See?” she said. “Better.”

I nod now for a different reason. Not because the glass is spotless, but because I understand the exchange. I can’t stop the drift. But because of *Popo*, I can choose where to spend my energy: forty minutes to call on Sunday, even when I’m tired; ten to organize my folder of papers I’ll need for tomorrow; and an hour to help a friend who is slipping. I can choose what gets my attention, my time, my hands.

The second law doesn't bend for love. But her hands bought me the right to decide where to burn my little hour of order before the heat runs out.