

The Fixation

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For Hannu Blommila

Inside the corroded rock was what looked like a geared embryo—the incipient bud of an industrial age that remained unborn for a millennium. (John Seabrook, *The New Yorker*, May 14, 2007)

KATIB, THE SECURITY guard who usually works the graveyard shift, has already clocked on when Rana swipes her badge through the reader. He gives her a long-suffering look as she bustles past in her heavy coat, stooping under a cargo of document boxes and laptops. "Pulling another all-nighter, Rana?" he asks, as he has asked a hundred times before. "I keep telling you to get a different job, it?."

"I worked hard to get this one," she tells him, almost slipping on the floor, which has just been polished to a mirrored gleam by a small army of robot cleaners. "Where else would I get to do this and Actually get paid for it?" it

"Whatever they're paying you, it isn't enough for all those bags under your eyes."

She wishes he wouldn't mention the bags under her eyes—it's not as if she exactly likes them—but she smiles anyway, for Katib is a kindly man without a hurtful thought in his soul. "They'll go," she says. "We're on the home stretch, anyway. Or did you somehow not notice that there's this big opening ceremony coming up?"

"Oh, I think I heard something about that," he says, scratching at his beard. "I just hope they need some old fool to look after this wing when they open the new one."

"You're indispensable, Katib. They'd get rid of half the exhibits before they put you on the street."

"That's what I keep telling myself, but..." He gives a burly shrug, and then smiles to let her know it isn't her business to worry about his problems.

"Still, it's going to be something, isn't it? I can see it from my balcony, from all the way across the town. I didn't like it much at first, but now that's up there, now that it's all shining and finished, it's starting to grow on me. And it's ours, that's what I keep thinking. That's our museum, nobody else's. Something to be proud of."

Rana has seen it too. The new wing, all but finished, dwarfs the existing structure. It's a glittering climate-controlled ziggurat, the work of a monkish British architect who happens to be a devout Christian. A controversial choice, to be sure, but no one who has seen that tidal wave of glass and steel rising above the streets of the city has remained unimpressed. As the sun tracks

across the sky, computer-controlled shutters open and close to control the flood of light into the ziggurat's plunging atrium—the atrium where the Mechanism will be the primary exhibit—and maintain the building's ideal ambient temperature. From afar, the play of those shutters is an enchanted mosaic: a mesmerizing, never-repeating dance of spangling glints. Rana read in a magazine that the architect had never touched a computer until he arrived in Greater Persia, but that he took to the possibilities with the zeal of the converted.

"It's going to be wonderful," she says, torn between making small talk with the amiable Katib and getting started on her work. "But it won't be much of an

opening ceremony if the Mechanism isn't in place, will it?"

"Which is a kind way of saying, you need to be getting to your office." He's smiling as he speaks, letting her know he takes no offense. "You need some help with those boxes and computers, my fairest?"

"I'll be fine, thanks."

"You call me if you need anything. I'll be here through to six." With that he unfolds a magazine and taps the sharp end of a pencil against the grid of a half-finished puzzle. "And don't work too hard," he says under his breath, but just loud enough that she will hear.

Rana doesn't pass another human being on her way to the office. The public part of the museum is deserted save for the occasional cleaner or patrolling security robot, but at least the hallways and exhibits are still partially illuminated, and from certain sightlines she can still see people walking in the street outside, coming from the theater or a late restaurant engagement. In the private corridors, it's a different story. The halls are dark and the windows too high to reveal anything more than moonlit sky. The robots don't come here very often and most of the offices and meeting rooms are locked and silent. At the end of one corridor stands the glowing sentinel of a coffee dispenser. Normally Rana takes a cup to her room, but tonight she doesn't have a free hand; it's enough of a job just to shoulder her way through doors without dropping something.

Her room is in the basement: a cool, windowless crypt that is half laboratory and half office. Her colleagues think she's mad for working at night, but Rana has her reasons. By day she has to share her facilities with other members of the staff, and what with all the talk and interruptions she tends to get much less work done. If that's not enough of a distraction, there is a public corridor that winds its way past the glass-fronted rooms, allowing the museum's visitors to watch cataloging and restoration work as it actually happens. The public make an effort to look more interested than they really are. Hardly surprising, because the work going on inside the offices could not look less interesting or less glamorous. Rana has been spending the last three weeks working with microscopically precise tools on the restoration of a single bronze gearwheel. What the visitors would imagine to be a morning's work has consumed more of her life than some relationships. She already knows every scratch and

chip of that gearwheel like an old friend or ancient, bitter adversary.

There's another reason why she works at night. Her mind functions better in the small hours. She has made more deductive leaps at three in the morning than she has ever done at three in the afternoon, and she wishes it were not so.

She takes off her coat and hangs it by the door. She opens the two laptops, sets them near each other, and powers them up. She keeps the office lights low, with only enough illumination to focus on the immediate area around her bench. The gearwheel is centermost, supported on an adjustable cradle like a miniature music stand. On either side, kept in upright stands, are various chrome-plated tools and magnifying devices, some of which trail segmented power cables to a wall junction. There is a swing-down visor with zoom optics. There are lasers and ultrasound cleaning baths. There are duplicates of the gearwheel and its brethren, etched in brass for testing purposes. There are plastic models of parts of the Mechanism, so that she can take them apart and explain its workings to visitors. There are other gearwheels which have already been removed from the device for restoration, sealed in plastic boxes and racked according to coded labels. Some are visibly cleaner than the one she is working on, but some are still corroded and grubby, with damaged teeth and scabrous surface deterioration.

And there is the Mechanism itself, placed on the bench on the far side of the gearwheel she is working on. It is the size of a shoebox, with a wooden casing, the lid hinged back. When it arrived the box was full of machinery, a tight-packed clockwork of arbors and crown wheels, revolving balls, slotted pins and delicate, hand-engraved inscriptions. None of it did anything,

though. Turn the input crank and there'd just be a metallic crunch as stiff, worn gears locked into immobility. No one in the museum remembers the last time the machine was in proper working order. Fifty years ago, she's heard someone say—but not all of the gearing was in place even then. Parts were removed a hundred years ago and never put back. Or were lost or altered two hundred years ago. Since then the Mechanism has become something of an embarrassment: a fabled contraption that doesn't do what everyone expects it to.

Hence the decision by the museum authorities: restore the Mechanism to full and authentic functionality in time for the reopening of the new wing. As the foremost native expert on the device, the work has naturally fallen to Rana. The authorities tried to foist a team on her, but the hapless doctoral students soon realized their leader preferred to work alone, unencumbered by the give and take of collaboration.

Share the glory? Not likely.

With the wall calendar reminding her how few weeks remain to the opening, Rana occasionally wonders if she has taken on too much. But she is making progress, and the most difficult parts of the restoration are now behind her.

Rana picks up one of her tools and begins to scrape away the tiniest burr of corrosion on one of the gear's teeth. Soon she is lost in the methodical repetitiveness of the task, her mind freewheeling back through history, thinking of all the hands that have touched this metal. She imagines all the people this little clockwork box has influenced, all the lives it has altered, the fortunes it has made and the empires it has crushed. The Romans owned the Mechanism for 400 years—one of their ships must have carried it from Greece, perhaps from the island of Rhodes—but the Romans were too lazy and incurious to do anything with the box other than marvel at its computational abilities. The idea that the same clockwork that accurately predicted the movements of the sun, moon, and the planets across an entire Metonic cycle—235 lunar months—might also be made to do other things simply never occurred to them. The Persians were different. The Persians saw a universe of possibility in those spinning wheels and meshing teeth. Those early clocks and calculating boxes—the clever devices that sent armies and navies and engineers across the globe, and made Greater Persia what it is today—bear scant resemblance to the laptops on Rana's desk. But the lineage is unbroken.

There must be ghosts, she thinks: caught in the slipstream of this box, dragged by the Mechanism as it ploughed its way through the centuries. Lives changed and lives extinguished, lives that never happened at all, and yet all of them still in spectral attendance, a silent audience crowding in on this quiet basement room, waiting for Rana's next move.

Some of them want her to destroy the machine forever.

Some of them want to see it shine again.

Rana doesn't dream much, but when she does she dreams of glittering brass gears meshing tight against each other, whirring furiously, a dance of metal and geometry that moves the heavens.

SAFA DREAMS OF numbers, not gears: she is a mathematician. Her breakthrough paper, the one that has brought her to the museum, was entitled "Entropy Exchange and the Many Worlds Hypothesis."

As a foreign national, admitted into the country because of her expertise in an exceedingly esoteric field, Safa has more rights than a refugee. But she must still submit to the indignity of wearing a monitoring collar, a heavy plastic cuff around her neck which not only records her movements, not only sees and hears everything she sees and hears, but which can stun or euthanize her if a government agent deems that she is acting contrary to the national interests. She must also be accompanied by a cyborg watchdog at all times: a sleek black prowling thing with the emblem of the national security agency across its bulletproof chest. At least the watchdog has the sense to lurk at the back of the room when she is about to address the gathered administrators and sponsors, at this deathly hour.

"I'm sorry we had to drag you out here so late," the museum director tells the

assembled audience. "Safa knows more than me, but I'm reliably informed that the equipment works best when the city's shutting down for the night—when there isn't so much traffic, and the underground trains aren't running. We can schedule routine jobs during the day, but something like this—something this delicate—requires the maximum degree of noise-suppression. Isn't that right, Safa?"

"Spot on sir. And if everyone could try and hold their breath for the next six hours, that would help as well." She grins reassuringly—it's almost as if some of them think she was serious. "Now I know some of you were probably hoping to see the Mechanism itself, but I'm afraid I'm going to have to disappoint you—positioning it inside the equipment is a very slow and tricky procedure, and if we started now we'd all still be here next week. But I can show you something nearly as good."

Safa produces a small white pottery jug that she has brought along for the occasion. "Now, you may think this is just some ordinary old jug I found at the back of a staff cupboard... and you'd be right. It's probably no more than ten or fifteen years old. The Mechanism, as I am sure I don't have to remind anyone here, is incomparably older: we know the ship went down around the first half of the First Century BC. But I can still illustrate my point. There are a near-infinite number of copies of this object, a lid they are all the same jug. In one history, I caught a cold and couldn't make it today, and someone else is standing up and talking to you, holding the same jug. In another, someone took the jug out of that cupboard years ago and it's living in a kitchen halfway across the city. In another it was bought by someone else and never ended up in the museum. In another it was broken before it ever left the factory."

She smiles quickly. "You see the point I'm making. What may be less clear is that all these copies the same jug are in ghostly dialogue with each other, linked together by a kind of quantum entanglement—though it's not really quantum and it's not exactly entanglement." Another fierce, nervous smile. "Don't worry: no mathematics tonight! The point is, no matter what happens to this jug, no matter how it's handled or what it comes into contact with, it never quite loses contact with its counterparts. The signal gets fainter, but it never goes away. Even if I do this."

Abruptly, she lets go of the jug. It drops to the floor and shatters into a dozen sharp white pieces.

"The jug's broken," Safa says, pulling a sad face. "But in a sense it still exists. The other copies of it are still doing fine—and each and every one of them felt an echo of this one as it shattered. It's still out there, ringing back and forth like a dying chime." Then she pauses and kneels down, gathering a handful of the broken pieces into her palms. "Imagine if I could somehow take these pieces and get them to resonate with the intact copies of the jug. Imagine further still that I could somehow steal a little bit of orderedness from each of those copies, and give back some of the disorderedness of this one in return—a kind of swap."

Safa waits a moment, trying to judge whether she still has the audience's attention. Are they following or just pretending to follow? It's not always easy to tell, and nothing on the administrator's face gives her a clue. "Well, we can do that. It's what we call Fixation—moving tiny amounts of entropy from one world—one universe—to another. Now, it would take a very long time to put this jug back the way it was. But if we started with a jug that was a bit damaged, a bit worn, it would happen a lot quicker. And that's sort of where we are with the Antikythera Mechanism. It's in several pieces, and we suspect there are components missing, but in other respects it's in astonishing condition for something that's been underwater for two thousand years."

Now she turns around slowly, to confront the huge, humming mass of the Fixator. It is a dull silver cylinder with a circular door in one end, braced inside a massive orange chassis, festooned with cables and cooling ducts and service walkways. The machine is as large as a small fusion reactor and several times as complicated. It has stronger, more responsive magnets, a

harder vacuum, and has a control system so perilously close to intelligence that a government agent must be on hand at all times, ready to destroy the machine if it slips over the threshold into consciousness.

"Hence the equipment. The Mechanism's inside there now—in fact, we've already begun the resonant excitation. What we're hoping is that somewhere out there—somewhere out in that sea of alternate timelines—is a copy of the Mechanism that never fell into the water. Of course, that copy may have been destroyed subsequently—but somewhere there has to be a counterpart to the Mechanism in better condition than this one. Maybe near-infinite numbers of counterparts, for all we know. Perhaps we were the unlucky ones, and nobody else's copy ended up being lost underwater."

She coughs to clear her throat, and in that instant catches a reflected glimpse of herself in the glass plating of one of the cabinets in the corner of the room. Drawn face, tired creases around the mouth, bags under the eyes—a woman who's been working too hard for much too long. But how else was an Iranian mathematician supposed to get on in the world, if it wasn't through graft and dedication? It's not like she was born into money, or had the world rushing to open doors for her.

The work will endure long after the bags have gone, she tells herself.

"The way it happens," she says, regaining her composure, "is that we'll steal an almost infinitesimally small amount of order from an almost infinitely large number of alternate universes. In return, we'll pump a tiny amount of surplus entropy into each of those timelines. The counterparts of the Mechanism will hardly feel the change: the alteration in any one of them will be so tiny as to be almost unmeasurable. A microscopic scratch here; a spot of corrosion or the introduction of an impure atom there. But because we're stealing order from so many of them, and consolidating that order into a single timeline, the change in our universe will be enormous. We'll win, because we'll get back the Mechanism as it was before it went into the sea. But no one else loses; it's not like we're stealing someone else's perfect copy and replacing it with our own damaged one."

She thinks she has them then—that it is all going to go without a hitch or a quibble, and they can all shuffle over to the tables and start nibbling on cheese squares. But then a hand raises itself slowly from the audience. It belongs to an intense young man with squared-off glasses and a severe fringe. He asks: "How can you be so sure?"

Safa grimaces. She hates being asked questions.

RANA PUTS DOWN her tool and listens very carefully. Somewhere in the museum there was a loud bang, as of a door being slammed. She is silent for at least a minute, but when no further sound comes she resumes her labors, filling the room with the repetitious scratch of diamond-tipped burr against corroded metal.

Then another sound comes, a kind of fluttering, animal commotion, as if a bird is loose in one of the darkened halls, and Rana can stand it no more. She leaves her desk and walks out into the basement corridor, wondering if someone else has come in to work. But the other rooms and offices remain closed and unlit.

She is about to return to her labors and call Katib's desk, when she hears the soft and feathery commotion again. She is near the stairwell and the sound is clearly coming from above her, perhaps on the next floor up.

Gripping the handrail, Rana ascends. She is being braver than perhaps is wise—the museum has had its share of intruders, and there have been thefts—but the coffee machine is above and she had been meaning to fetch herself a cup for at least an hour. Her heart is in her throat when she reaches the next landing and turns the corner into the corridor, which is as shabby and narrow as any of the museum's non-public spaces. There are high, institutional windows on one side and office doors on the other. But there is the machine, standing in a pool of light two doors down, and there is no sign of an intruder. She walks to the machine, fishing coins from her pocket, and punches in her order. As the machine clicks and gurgles into life, Rana feels a breeze

against her cheek. She looks down the corridor and feels it again: it's as if there's a door open, letting in the night air. But the only door should be the one manned by Katib, on the other side of the building.

While her coffee is being dispensed Rana walks in the direction of the breeze. At the end the corridor reaches the corner of this wing and jogs to the right. She turns the bend and sees something unanticipated. All along the corridor, there is no glass in the windows, no metal in the frames: just tall blank openings in the wall. And there, indeed, is a fluttering black shape: a crow, or something like a crow, which has come in through one of those openings and cannot now find its way back outside. It keeps flinging itself at the wall between the windows, a gleam of mad desperation in its eyes.

Rana stands still, wondering how this can be. She was here. She remembers passing the machine and thinking she would take a cup if only she were not already staggering under her boxes and computers.

But there is something more than just the absence of glass. Is she losing her mind, or do the window apertures look narrower than they used to do, as if the walls have begun to squeeze the window spaces tight like sleepy eyes?

She must call Katib.

She hurries back the way she has come, forgetting all about the coffee she has just paid for. But when she turns the bend in the corridor, the machine is standing there dark and dead, as if it's been unplugged.

She returns to the basement. Under her feet the stairs feel rougher and more crudely formed than she remembers, until she reaches the last few treads and they start to feel normal again. She pauses at the bottom, waiting for her mind to straighten itself out.

Down here at least all is as it should be. Her office is as she left it, with the lights still on, the laptops still aglow, the gearwheel still mounted on its stand, the disemboweled Mechanism still sitting on the other side of the desk.

She eases into her seat, her heart still racing, and picks up the telephone.

"Katib?"

"Yes, my fairest," he says, his voice sounding more distant and crackly than she feels it should, as if he is speaking from halfway around the world. "What can I do for you?"

"Katib, I was just upstairs, and..."

But then she trails off. What is she going to tell him? That she saw open gaps where there should be windows?

"Rana?"

Her nerve deserts her. "I was just going to say... the coffee machine was broken. Maybe someone could take a look at it."

"Not until tomorrow, I am afraid—there is no one qualified. But I will make an entry in the log."

"Thank you, Katib."

After a pause he asks, "There was nothing else, was there?"

"No," she says. "There was nothing else. Thank you, Katib."

She knows what he must be thinking. She's been working too hard, too fixated on the task. The Mechanism does that to people, it's been said. They get lost in its labyrinthine possibilities and never emerge again. Not the way they were, anyway.

But she thinks she can still hear that crow.

"How CAN I be so sure about what?" Safa asks, with an obliging smile.

"That this is going to work the way you say it will," the intense young man answers.

"The mathematics is pretty clear," Safa says. "I should know; I discovered most of it." Which comes less modestly than she had intended, although no one seems to mind. "What I mean is, there isn't any room for ambiguity. We know that the sheath of alternate timelines is near-infinite in extent, and we know we're only pumping the smallest conceivable amount of entropy into each of those timelines." Safa holds the smile, hoping that will be enough for the young man, and that she can continue with her presentation.

But the man isn't satisfied. "That's all very well, but aren't you presupposing that all those other timelines have order to spare? What if that isn't the case? What if all the other Mechanisms are just as corroded and broken as ours—what will happen then?"

"It'll still work," Safa says, "provided the total information content across all the timelines is sufficient to specify one intact copy, which is overwhelmingly likely from a statistical standpoint.

Of course, if all the Mechanisms happen to be damaged in exactly the same fashion as ours, then the Fixation won't work—you still can't get something for nothing. But that's not very likely. Trust me; I'm very confident that we can find enough information out there to reconstruct our copy."

The man seems to be content with that answer, but just when Safa is about to open her mouth and continue with her speech, her adversary raises his hand again.

"Sorry, but... I can't help wondering. Does the entropy exchange happen uniformly across all those timelines?"

It's an odd, technical-sounding question, suggesting that the man has done more homework than most. "Actually, no," Safa says, guardedly. "The way the math works out, the entropy exchange is ever so slightly clumped. If a particular copy of the Mechanism has more information to give us, we end up pumping a bit more entropy into that copy than one which has less information to offer. But we're still talking about small differences, nothing that anyone will actually notice."

The man pushes a hand through his fringe. "But what if there's only one?"

"I'm sorry?"

"I mean, what if there's only one intact copy out there, and all the rest are at least as damaged as our own?"

"That can't happen," Safa says, hoping that someone, anyone, will interrupt by asking another question. It's not that she feels on unsafe ground, just that she has the sense that this could go on all night.

"Why not?" the man persists.

"It just can't. The mathematics says it's so unlikely that we may as well forget about it."

"And you believe the mathematics."

"Why shouldn't I?" Safa is beginning to lose her patience, feeling cornered and put upon. Where is the museum director to defend her when she needs him?

"Of course I believe it. It'd be pretty strange if I didn't."

"I was just asking," the man says, sounding as if he's the one who's under attack. "Maybe it isn't very likely—I'll have to take your word for that. But I only wanted to know what would happen."

"You don't need to," Safa says firmly. "It can't happen—not ever. And now can I please continue?"

HER FINGER STABS down on Katib's button again. But there is nothing, not even the cool purr of the dialing tone. The phone is mute, and now that she looks at it, the display function is dead. She puts the handset down and tries again, but nothing changes.

That's when Rana pays proper attention to the gearwheel, the one she has been working on. There are thirty-seven wheels in the Antikythera Mechanism and this is the twenty-first, and although there was still much to be done until it was ready to be replaced in the box, it now looks as if she has hardly begun. The surface corrosion that she has spent weeks rectifying has returned in a matter of minutes, covering the wheel in a furry blue-green bloom as if someone has taken the artifact and dipped it in acid while she was out of the office. But as she looks at it, blinking in dismay, as if it is her eyes that are wrong, rather than the wheel, she notices that three teeth are gone, or worn away so thoroughly that they may as well not be there. Worse, there is a visible scratch—actually more of a crack—that cuts across one side of the wheel, as if it is about to fracture into two pieces.

Mesmerized and unsettled in equal measure, Rana picks up one of her tools—the scraper she was using before she heard the noise—and touches it against part

of the blue-green corrosion. The bloom chips off almost instantly, but as it does so it takes a quadrant of the wheel with it, the piece shattering on a heap of pale granules on her desk. She stares in numb disbelief at the ruined gear, with a monstrous chunk bitten out of the side of it, and then the tool itself shatters in her hand.

"This can't be happening," Rana says to herself. Then her gaze falls on the other gearwheels, in their plastic boxes, and she sees the same brittle corrosion afflicting them all.

As for the Mechanism itself, the disemboweled box: what she sees isn't possible. She can just about accept that some bizarre, hitherto-undocumented chemical reaction has attacked the metal in the time it took for her to go upstairs and come down again, but the box itself is wood—it hasn't changed in hundreds of years, not since the last time the casing was patiently replaced by one of the Mechanism's many careful owners.

But now the box has turned to something that looks more like rock than wood, something barely recognizable as a made artifact. With trepidation Rana reaches out and touches it. It feels fibrous and insubstantial. Her finger almost seems to ghost through it, as if what she is reaching for is not a real object at all, but a hologram. Peering into the heart of the Mechanism, she sees the gears that are still in place have fused together into a single corroded mass, like a block of rock that has been engraved with a hazy impression of clockwork.

Then Rana laughs, for the pieces of the puzzle have just fallen into place. This is all a joke, albeit—given the pressures she is already under—one in spectacularly bad taste. But a joke all the same, and not a marker of her descent into insanity. She was called upstairs by a noise—how else were they going to get into her office and swap the Mechanism for this ruined half-cousin? The missing windows, the panicked bird, seem like details too far, random intrusions of dream-logic, but who can guess the mind of a practical joker?

Well, she has a sense of humor. But not now, not tonight. Someone will pay for this. Cutting off her telephone was the last straw. That was nasty, not funny. She moves to leave her bench again and find whoever must be spying on her, certain that they must be lurking in the shadows outside, maybe in the unlit observation corridor, where they'd have a plain view of her discomfort. But as she places her hand down to push herself up, her fingers slip into the smoky surface of the bench.

They vanish as if she were dipping them into water.

All of a sudden she realizes that it was not the Antikythera Mechanism that was growing insubstantial, but everything around her.

No, that's not it either. Something is happening to the building, but if the table were turning ghostly, the heavy things on it—the Mechanism, the equipment, the laptops—would have surely sunk through it by now. There's a simpler explanation, even if the realization cuts through her like a shaft of interstellar cold.

She's the one fading out, losing traction and substantiality.

Rana rises to her feet eventually, but it's like pushing herself against smoke. She isn't so much ...standing as floating with her feet in vague contact with the ground. The air in her lungs is beginning to feel thin, but at the same time there's no sense that she is about to choke. She tries to walk, and for a moment her feet paddle uselessly against the floor, until she begins to pick up a deathly momentum in the direction of the door.

The corridor at the base of the stairs was normal when she returned from her visit to the next floor, but now it has become a dark, forbidding passageway, with rough-formed doorways leading into dungeon-like spaces. Her office is the only recognizable place, and even her office is not immune to the changes. The door has vanished, leaving only a sagging gap in the wall. The floor is made of stones, unevenly laid. Halfway to her bench the stones blend together into something like concrete, and then a little further the concrete gains the hard red sheen of the flooring she has come to expect. On the desk, her electric

light flickers and fades. The laptops shut down with a whine, their screens darkening. The line of change in the floor creeps closer to the desk, like an advancing tide. From somewhere in the darkness Rana hears the quiet, insistent dripping of water.

She was wrong to assume that the things on the desk were immune to the fading. She began to go first, but now the same process of fade-out is beginning to catch up with her tools, with her notes and the laptops and the fabric of the bench itself. Even the Mechanism is losing its grip on reality, its gears and components beginning to dissolve before her eyes. The wooden box turns ash-gray and crumbles into a pile of dust. A breeze fingers its way into the room and spirits the dust away.

The Mechanism was the last thing to go, Rana realizes: the tide of change had come in from all directions, to this one tiny focus, and for a little while the focus had held firm, resisting the transforming forces.

Now she feels the hastening of her own process of fade-out. She cannot move or communicate. She is at the mercy of the breeze.

It blows her through the cold stone walls, out into the night-time air of a city she barely recognizes. She drifts through the sky, able to witness but not able to participate. In all directions she sees only ruin and desolation. The shells of buildings throw jagged outlines against the moonlit sky. Here and there she almost recognizes the fallen corpse of a familiar landmark, but so much is different that she soon loses her sense of direction. Even the shape of the river, shining back under moonlight, appears to have meandered from the course she remembers. She sees smashed stone and metal bridges that end halfway across to the other bank. Crimson fires burn on the horizon and flicker through the eyeholes of gutted buildings.

Then she notices the black machines, stalking their heir way through the warrens and canyons between the ruins. Fierce and frightening engines of war, with their turreted guns swiveling into doorways and shadows, the iron treads of their feet crunching down on the rubble of the pulverized city, the rubble that used to be dwellings and possessions, until these juggernauts arrived. She does not need an emblem or flag to know that these are the machines of an occupying force; that her city is tinder the mechanized heel of an invader. She watches as a figure springs out of concealment to lob some pathetic burning torch at one of the machines. The turret snaps around and a lance of fire stabs back at the assailant. The figure drops to the ground.

The wind is gusting her higher, turning the city into a map of itself. As her point of view changes direction she catches sight of the building that used to be the Museum of Antiquities, but what she sees is no more than a shattered prison or fortress, one among many. And for an instant she remembers that the shell of the museum was very old, that the building—or a succession of buildings, each built on the plan of its predecessor—had stood in the same location for many centuries, serving many rulers.

In that same instant, Rana comes to a momentary understanding of what has happened to both her and her world. The Mechanism has been wrenched from history, and accordingly—because the Mechanism was so essential—history has come undone. There is no Museum of Antiquities, because there is no Greater Persia. The brilliant clockwork that dispatched armies and engineers across the globe simply never existed.

Nor did Rana.

But the moment of understanding passes as quickly as it came. Ghosts are not the souls of the dead, but the souls of people written out of history when history changes. The worst thing about them is that they never quite recall the living people they used to be, the things they once witnessed.

The wind lofts Rana higher, into thinning silver clouds. But by then she no longer thinks of anything at all, except the endless meshing of beautiful bronze gearwheels, moving the heavens for all eternity.