



The Falling Sky








The Falling Sky

Pippa Goldschmidt



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Pippa Goldschmidt grew up in London, and now lives in Edinburgh. She is a graduate of the renowned Masters course in creative writing at the University of Glasgow. She has a PhD in astronomy and worked as an astronomer for several years at Imperial College, followed by posts in the civil service including working in outer space policy.

In 2012 Pippa was awarded a Scottish Book Trust/Creative Scotland New Writers Award. From 2008 to 2012 she was writer in residence at the ESRC Genomics Policy and Research Forum, based at the University of Edinburgh. *The Falling Sky* is her first novel.







For my family







Nothing is as certain as death.

At first, the image is just a blur in the darkness, so Jeanette refocuses her telescope and the blob becomes clear and sharp. A young girl, twelve years old, in a blue and white gingham dress. She's immobile, fixed against the blank, dark background.

Now, and for ever more, she hovers just above the event horizon of the black hole. And when Jeanette tries to reach out to her, she's not really there. All that's left is this last photo of her, static on a summer's day in the garden.







NOW

Jeanette may as well be invisible. She's standing on the stage in the auditorium in front of about two hundred other astronomers, presenting the results of her PhD work at the annual British conference. But she can tell no one's listening.

She doesn't blame them. She wouldn't listen either, if she didn't have to. If she could only find a way of drowning out that slightly tremulous voice in her head, which is going on and on about dust in early galaxies. Still, not long now. She's reached the final slide, showing the actual data. That may interest them more.

She shines the red dot of the laser pointer onto the screen, wishing it didn't betray her nervousness. She's trying to show them the centre of a galaxy, the point where the contours on the map converge into the peak of intensity, and the dot is dancing around it, refusing to settle down. Perhaps it doesn't matter. She's only just finished her thesis, she's expected to be young and overawed by the prospect of speaking at a conference.

But they're not interested in this slide either. Some of them are working on their laptops, others are talking to each other. Several people are fiddling with their phones, reading the conference programme, even reading newspapers. Her boss, the Death Star, is asleep. That's to be expected, he always sits in the front row and sleeps, only waking up at the end to ask some horribly pertinent question. She wonders what he'll ask today. Because it's not enough to give the talk in a whisper and be ignored; the experience isn't complete without the ritual of questions afterwards, to allow the (mostly male) audience to do the verbal equivalent of showing their tail feathers off to each other.





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She gets to the end, clicks off the laser, stands and waits. She doesn't have to wait long.

'Why haven't you used visible wavelengths as well as infrared?' from someone who appears to have been playing a game on his mobile phone and clearly hasn't listened to the main point of her talk, which was the comparison of visible and infrared images.

'Have you considered an alternative explanation of the results?' This is from someone she fears, a Bright Young Thing not long arrived here from Harvard and keen to demolish all before him.

'What sort of alternative explanation are you thinking of?' She certainly can't think of any and he obviously wants to enlighten everyone. He sets off on an elaborate discussion, gargoyleed with words she has never heard of. When he finally stops talking she can't even summon the energy to reply to him, she just points silently to someone else who is waving his hand at her, as if summoning a waitress to remove his dirty plates.

'Why haven't you referenced my paper on this galaxy?'

'I have.' She hopes she sounds rude.

The Death Star wakes up and stares at her as if he's never seen her before. 'What does it mean?' he asks before his eyes snap shut again, not bothering to wait for her reply.

What does it mean? It means what she has already explained to him and everyone else, that the peak of infrared emission from this galaxy is spatially offset from the peak at visible wavelengths, implying a large amount of dust must be present which is obscuring some of the stars, soaking up the light and re-emitting it at longer wavelengths. The dust is made by exploding stars come to the end of their lives, so this is an old galaxy, it's already produced at least one generation of stars. Interesting enough, if you want to know the detail of how galaxies work.

It means she has fulfilled the obligations of her PhD and carried out a suitably non-controversial (i.e. boring) project, proved herself capable of slogging away at a telescope night after night to gather





data of dubious quality, writing software not obviously riddled with errors to reduce and analyse the data, and then copying the style of thousands of other equally boring academic papers to report what she has discovered, so that she can get a job and carry on doing this for the rest of her life. If she is lucky.

This is what it means right now. But she knows that it means other things too.

It means she gets to spend time using real telescopes, ones large enough to see galaxies near the beginning of the Universe, or the edge of time, or whatever fancy phrase you want to use. Telescopes a long way away, in deserts and on the tops of mountains, in places so remote that they seem scarcely less odd than the galaxies themselves.

It means she has knowledge. She knows how to unpick apparently simple statements such as 'the sky is dark at night' to get at the information contained inside. She knows about the past, present and future of stars, of galaxies, of the Universe itself. She knows how to decipher the light of the night sky.

It means she has escaped. Escaped from home, the depression in the sofa, the radioactive glow of the TV, the outer space vacuum in the house, and the cigarette ash sprinkled over everything like earth on a coffin.

The Death Star starts snoring again before she has finished answering him. Afterwards she realises he might have done her a favour, by getting her to repeat the main point of her talk. Perhaps he thought she hadn't made it clear enough during her presentation and was giving her the opportunity to reiterate it. Or he may simply have missed it when she said it the first time. Or, and this is probably the most likely explanation, he's just bloody-minded and enjoys trying to wrong-foot the speakers.

She's been working for him for a year now but she still hasn't fathomed him. Nobody knows who first came up with his nickname or what its original meaning was, but it's endured because it suits him





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in its neat combination of his main research interest; supernovae, those massive stars that die in a spectacular explosion of light, together with the fear he instils in other astronomers as he rumbles up and down the corridors at the Observatory.

Later, as they're going into the hall where the conference dinner is taking place, she sees Richard, the other post-doc at the Observatory, surrounded by a crowd of people she doesn't know. Richard is laughing, an awful braying sound that's much louder than the underlying burble of words in the hall. She knows what the laughter means, it is supposed to signify that Richard is comfortable talking with these people. She's tempted to go over and join him, anyone can sit where they like at these things, and all it takes is a battle of nerves to go and sit next to the Astronomer Royal. Why shouldn't she belong too?

So she starts to work her way through the groups of people. A couple of people recognise her, maybe from the talk she gave that afternoon, and nod. Most people don't pay any attention to her. As she reaches the table where Richard and the Astronomer Royal are sitting, she pauses for a moment, but nobody notices her. So she pulls out a chair and sits down in silence. She's sitting beside two men she doesn't recognise. She appears to have interrupted their conversation, because after a brief pause they start to talk to each other as if she isn't there. She fights back the impulse to look down at her body to check she's still visible. Opposite her, the Astronomer Royal is staring into his empty wine glass as Richard explains to him with equal amounts of enthusiasm and inaccuracy a new technique for imaging very faint objects.

She glares at Richard but she knows she shouldn't feel so cross; she's partly responsible for him being here in the first place.

It was just after they both started work as post-docs, about a year ago, after being students for so long. At lunch that day she found Richard sitting at the furthest table in the canteen, listening to a man



in a dark suit who was unknown to her. The man was talking about galaxy surveys; large projects to gather information on thousands of galaxies to determine how they change and evolve with time. There were many such surveys going on at telescopes all over the world. The man was explaining that his survey was one of the largest, involving hundreds of nights of telescope time, and hundreds of astronomers working together. It sounded like a job advert, and Jeanette realised what was going on. He was part of the consortium, a shadowy group of top astronomers collaborating on a vast project running for years, slurping up time on telescopes and promising to answer all the remaining questions in cosmology. It sounded like he was trying to get Richard involved in this work. Superficially it sounded appealing; Richard would get his name on lots of papers. But Jeanette guessed that they wouldn't actually let him do anything interesting on the project, all the big names would have divided the interesting analysis, the really sexy stuff, between them. They needed grunts like Richard to help out on the grindingly boring data reduction, to turn the computing handle and crank out zillions of images and spectra of galaxies.

She glanced at Richard, at his glossy hair and pink cheeks. He reminded her of a well-bred dog, sitting there eagerly gazing at the man in the suit, as if he expected a pat on the head. She couldn't be doing with this sort of work, the endless data collection where all the questions are pinned down in advance and all that's left to do is the drudgery. And it's not as if the consortium had actually published that much. They kept appearing at conferences, trailing their latest data like an advert for a future film that never got released. Rumour had it that they were sitting on thousands of images of galaxies. She would have liked to get her hands on that, but not at the cost of actually having to work with them. She'd leave that to the Richards of the world.

Perhaps it was because she was a woman, she thought, as she watched the two men. Up until the early twentieth century, women





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were trained to be human computers in astronomical observatories, to do mechanical tasks that ostensibly required no intellectual ability. She'd seen photos of them, rows and rows of girls in white pinafores seated at desks examining glass plates, their expressions a mixture of boredom and earnestness. They were trained to look for variable stars by spotting minute differences between the plates. Perhaps it was better than anything else they could hope to do, but still she resented any notion that she might have something in common with them, and so she would avoid being the invisible cog in the wheel.

After lunch when she was back in her new office thinking about her future research, Richard came in. She carried on staring at her computer screen, trying to look busy. She wasn't desperately keen on having to talk to him about his plans. But he stood there, obviously waiting for her to finish what she was doing, so eventually she had to look at him.

'So?' she said, trying to sound cheerful, 'did you succeed?'

'Not yet,' his smile was a bit lop-sided. 'I really want it, though.'

She looked back at her work, she wasn't used to people being so obvious about what they wanted. It made him seem naked, somehow. It was unseemly. She was aware that she was blushing.

He carried on. 'They've asked me to do something. As a sort of test, I think.' He was fiddling with his hands, and she realised that he was there because he needed her help.

'Well?'

'I have to work out a strategy for observing galaxy images down to a certain surface brightness. To get the details.' He paused, as if waiting for her to make the connection between this and her own work. This was the sort of calculation she did all the time. How long would it take a telescope to be able to detect a feature on a galaxy, such as a spiral arm?

'I've done that,' she said, surprised at the briskness in her voice. If he was hoping that she would be able to cover up the inadequacies in his ability to do his job, she needed to pretend, for both their sakes,





that it was simply to save time. ‘No point in you doing it again.’ And she scabbled around in the pile of papers that had accumulated on her desk to find what she needed, a table of numbers from her last observing trip. ‘This is for a four metre telescope, for a five sigma detection. This row shows surface brightness, and this shows length of time in seconds needed to achieve that level of statistical significance. Just scale it up or down for different sizes of telescopes.’

‘Thanks, Jeanette,’ he said, and she saw for the first time just how unnaturally white his teeth were. ‘You’re a star. Just give me a shout if you ever need my help. For anything.’

Now, she realises that the two men she’s sitting next to are from the consortium. One of them might have been the man in the canteen that day, she can’t be sure. Sometimes she’s not so good with faces, galaxies are easier to remember. Perhaps it’s because they’re further away.

The other face that keeps looming up from the past is the ice woman. She takes a slug of wine and tries not to think of the ice woman, hardly noticing someone sitting down next to her in the last empty chair left at their table. It’s an older man, old enough to be retired. Probably an emeritus professor. The conference is full of them, men who defined the subject forty or fifty years ago. Who set off like pioneers, with new telescopes to map the Universe, to chart its strange galaxies and different types of matter. She smiles shyly at the old chap next to her. These old geezers tend to be more courteous than the awful Bright Young Things, and as expected, this one smiles shyly back.

‘Are you an open-minded young woman?’ he says, so quietly it’s almost a whisper.

Not again. God knows it’s not the first time this has happened, but they’re usually drunk and this one looks quite sober. She doesn’t know if that makes it better or worse.





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‘I heard your talk and I thought you might want to see this,’ and he looks around him, before he starts fumbling around theatrically in his trouser pockets. The whole table falls silent as he finally manages to produce a stained and crumpled roll of papers and slaps it down next to her soup bowl, so that the roll unfurls and she can read the title; ‘An enquiry into the effects of the planets on the human psyche.’

‘So what did you do then?’ Later, in the bar with her collaborator, Maggie. Maggie’s snorting with laughter.

‘I had to politely listen to him talk about astrology for the rest of the entire bloody meal, didn’t I?’

‘Astrology! How embarrassing...Maggie purses her lips in disgust.

She just shrugs, not really wanting to talk about it any more, not wanting to consider why she seems to attract the freaks and nutters at conferences. Perhaps she looks too sympathetic. She sneaks a look at Maggie standing there, one arm balanced on the bar, nursing her first and only glass of wine that evening. There’s no clutter about Maggie. Nothing to distract her from her purpose in life.

She’s been collaborating with Maggie for a few years now, has watched Maggie’s fingers patter precisely over computer keyboards, has interrupted her quiet voice explaining the intricacies of galaxy formation, and has spilled coffee over her neatly annotated charts on countless observing trips at countless telescopes. Maggie’s a comrade in arms.

‘Let’s talk about our next trip,’ she says now to Maggie, who’s pushed her wine to one side and is ordering an orange juice. ‘We need to have a battle plan.’



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Jeanette sets off on her journey to fetch her sister back from the dead. She dives down into the blue night, beyond the surface layer of planets and their moons, far below the Sun and the bubbles of comets at the edge of the solar system. There is still a long way to go, before she reaches the midnight depths.

Now she's travelling with the Universe itself, riding the back of it, surfing on its energy.

She circles early galaxies, swoops into the sea of primordial hydrogen, photons streaming brilliant light from her fingertips. She finds her sister asleep, curled up at the bottom of the ocean. Kate dreams the world; its beginning and its end. She won't stop dreaming as long as Jeanette obeys the Universe's equations.





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The next week, Jeanette is back in Edinburgh, sitting in her small office at the top of the Observatory's west tower, with the papers balanced on her lap because her desk is too cluttered with towers of books and data tapes. She's supposed to be completing yet another job application form. She reads the question on the form, trying to concentrate on the meaning of the words as if this is the first time she has ever seen them; "Why should your research be funded?" and her mind stops.

She stares at the posters on the walls. '3rd ESO-CERN conference on the early Universe,' claims one. '4th Hawaii workshop on shrouded stars,' states another and, oddly crammed in between these symbols of earnest work, is a small photo of a naked man with horns scribbled on his head in felt-tip pen. The graffitied photo has been in this office longer than she has. She refuses to take it down although she can observe her students gazing at it during tutorials, when they should be paying more attention to her. She likes having a piece of irrationality in this place which is a monument to science and logic. No one will ever know who the man is, or why there are horns drawn on his image.

She wonders how long she can sit here without having a coherent thought. It is the privilege of the dusty academic, she muses, to be answerable to no one and so I can sit here not doing anything and not feel guilty. But she knows that's not really true. She's answerable to the grant funders, to the students and to the senior staff. She's answerable to herself when she wakes up at three o'clock in the morning and lies in bed working out how many more months, weeks, and days she has left on her grant.

Sometimes she feels like Alice in Wonderland, chasing rabbits down holes and falling for ever towards some unknown destination. Like Alice, she can read and talk as she falls, and speculate on what's happening to her. She catches glimpses of galaxies as she whizzes past, their spiral arms reaching out to her like octopus tentacles. The faces of other astronomers slide by, elongated by gravity, their voices





echoing down the hole.

‘It’s trivial to show that the Universe is closed so that every path in space-time loops back upon itself,’ says Tweedledum.

‘Nonsense, the Universe is expanding at an exponential rate. It’s hyperbolic so all paths lead to infinity,’ says Tweedledee.

She tries to talk to them but her words can’t be heard. I wonder if I’m in a vacuum, she thinks. In space, no one can hear me argue. She sees herself reading books speculating on what caused the Big Bang and whether there will be a big crunch. She observes herself having apparently sensible arguments with apparently normal human beings about the precise number of galaxies in the Universe. She watches herself give a seminar, as if to the Queen of Hearts, at which her intellectual rivals stand up and shout at her that she must be wrong and that she should have her head cut off, or at least lose her allocation of observing time on telescopes.

She decides to give up work for the day and leaves her office, going down the spiral staircase. At the bottom, as usual, she runs her fingers along the scar in the brickwork.

The story of what caused the scar is hardly ever referred to, and when it is, the details are usually wrong. But Jeanette’s read the original newspaper cuttings, and knows what really happened.

The standard story, usually told in a half-joking way, is that in 1913 a suffragette tried to bomb the Observatory, and failed, only causing a minor bit of damage to the library.

But in fact the bomb went off at the base of this tower, and did considerable damage to its structure, as well as to the telescope housed in it, causing some of the optics to be smashed and the metal casing to shear apart.

Jeanette wonders why the history is never told right, even though there’s plenty of evidence for what happened. The then Astronomer Royal’s apoplectic letters about the incident. The pale seam of newer bricks in the wall. Why do people here feel the need to dismiss their



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own history?

She's made an arrangement to go and meet her friend Paula. She walks down the steep hill away from the Observatory, through the streets of Marchmont, and into town. They always meet in the same pub, a basement dive off Rose Street.

When she gets there, it takes a moment for her eyes to adjust to the gloom inside, and then she notices that Becca is there too. They're both sitting at the usual little round table which is already covered with several empty glasses. They've clearly been there for some time.

Paula looks up at her and says, 'Oh, hi,' sounding surprised, as if they're not expecting her, as if she's interrupting them. Not for the first time, she wonders what they talk about when she's not there.

'Do you want a drink?' Paula says, and without waiting for an answer, she goes to the bar.

'She wants to ask you something,' Becca says.

'What?'

'Best wait until she gets back.'

Again, that feeling of being shut out. Becca just fiddles with her cigarette lighter until Jeanette feels compelled to say something. 'How was your day?'

'Oh, alright. Nothing exciting.'

They both watch Paula at the bar. Her head is thrown back and she's laughing with the barman. Becca twists to look out of the window so that Jeanette can see the hair cut short against the skin. The back of her neck looks as though it's not often exposed to the light, it looks pale and vulnerable.

Years ago, Jeanette was friends with Becca at university. Almost as many years ago, Paula was one of Jeanette's flatmates. Jeanette provides the official link between Paula and Becca, but sometimes when they both look at her, she feels like the odd one out.

Becca turns back, still half-silhouetted against the window and smiles slightly. 'What mysteries of the universe have you uncovered today?'



Jeanette feels the need to entertain. ‘I found a dead spider in my notebook. It probably smuggled itself into the country with me, when I came back from my last observing run in Chile.’

Becca seems to find this amusing. ‘Perhaps it’s the smallest illegal immigrant ever.’

‘I can see the headlines now — “Eight-legged asylum seekers hidden in science notebooks”’

Becca snorts with laughter. ‘Perhaps it could sell its story to the press — “My fear of being flushed down the plughole”’

‘It wasn’t a very successful bid for freedom though. It’s rather two-dimensional now.’

But after this they fall silent again. Jeanette isn’t inclined to say anything more. She’s done her bit with Becca and now it’s Becca’s turn. Except it never is Becca’s turn. Always beautiful, always remote, she sits there politely and waits for other people to entertain her. So they watch Paula flirt with the barman, until finally she wanders back with Jeanette’s wine and rearranges herself on her chair.

‘This chair’s too short,’ she says, and straightens her legs out as if to demonstrate their inconvenient length. ‘How much rent do you pay each month, Jeanette?’

Jeanette is taken aback by this non sequitur. ‘Um, a lot. Why?’

Paula touches her arm and smiles, showing very white teeth. ‘Wouldn’t it be good if you only had to pay half?’

Jeanette’s still confused. Paula’s wearing bright lipstick this evening, even redder and shinier than usual. Why is she so dolled up? ‘Yes but no one’s offering to pay half my rent for me. Are they?’

There’s a pause while Paula takes a swig of wine. ‘Well, I might,’ she says.

‘Why?’

‘Because I need a place to live.’

‘But you’ve already got somewhere.’

‘It’s too damn expensive. It’s not easy changing careers and going back to art college.’

Becca says, 'It's not only the expense. You can't actually carry on living in that flat now.' She adds to Jeanette, 'Sex-kitten shagged her landlord last month.'

'He let me off the rent for a week.'

'You mean he *paid* you?' Jeanette almost spits a mouthful of wine across the table.

Paula just twirls her wineglass. 'It was fun when we lived together, wasn't it?'

Jeanette grins. 'We had a lot of parties,' she tells Becca. 'We had a toga party and everyone else was draped in dirty white sheets, but Paula was Louise Brooks in this vampy black dress and a wig.'

'Well, there you are. We'll have fun again.'

She can remember the way that Paula looked at them all on her first day in the house, when they were equably lined up on the sofa in front of the television eating their tea, and there was a motorbike disembowelled on the rug. She'd never minded the motorbike, but it soon disappeared after Paula moved in.

The first one to get sucked in was Wayne. He lasted a month, before she found him crying in the kitchen one day, his fat little-boy face buckled with grief.

She tells Becca, 'She slept with all the other flatmates, that's why she had to move out.'

'Oh for Gods sake! Not all of them.' Paula laughs, clearly delighted that Jeanette is making her out to be such a femme fatale. 'I didn't sleep with you!'

'You're not a lezzer.'

'Do you have to use that word?' Becca glares at Jeanette.

'I like it,' says Jeanette. 'I'm reclaiming it from nasty school kids and men's mags.'

After Wayne the details are a bit hazy, but she can remember gradually becoming aware of the night-time noises coming from Paula's room next door. The noises were muffled, as though underwater, and Jeanette used to imagine Paula enticing men under



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the sea, wrapping her arms around them in the turquoise water and making love to them until they drowned.

'Isn't your flat awfully small for two people? Where is she going to sleep?' asks Becca.

'It's big enough.' She wonders why Becca seems so against the idea. It will be a squeeze if Paula's camping in the living room. But if she can't get a new job, some more money coming into the flat will be essential.

Becca doesn't say anything else, just taps her fingers on the table in a sharp staccato rhythm like Morse code.

'Hang on, is your sofa bed a double?' Paula looks thoughtful.

'No, not really.'

'That should be alright. Mr. Landlord was so awful in bed it's put me right off. It was about as sexy as inserting a tampon.'

Jeanette laughs and even Becca smiles, but Jeanette is surprised to see that her smile is as thin and sour as a slice of lemon.



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The next day she goes to visit Jon, one of the lecturers. Unlike most of the other scientists at the Observatory, Jon wears a proper white coat and works in a proper lab, tucked away in the basement of the newest building on the site. She enjoys watching Jon at work because everything seems so physical in the lab. He has dirt under his fingernails, and pieces of duct tape stuck to his sleeves. His biros are neatly lined up in his chest pocket. The wires on the lab bench are soldered together at junctions made by old tobacco tins. She thinks of Jon as an alchemist, transforming these physical components into pure knowledge.

Sometimes when she visits him in the lab, he tells her about the instrument he is building. This instrument is going to be part of a satellite, and once it's in space it will carry out detailed measurements of galaxies and transmit the data back to Earth. He's nicknamed the instrument Orion, the hunter. Its real name is the slightly more prosaic OIRS, short for 'optical and infrared spectrometer'.

This won't happen for at least another year. The instrument has to be shipped out to the satellite control centre, then bolted onto the satellite which will go the launch pad to be loaded onto the rocket that will be launched into outer space. It will fly until it reaches the right spot far above them, and then release the satellite.

She likes the sense of order in the lab; more than that, there is a sense that everything has a purpose. She's all too aware of her own slapdash approach to work, the ideas not followed through, the half written papers never finished. But Jon's instrument requires meticulous planning and teamwork if it is going to change from a sketch on a page to a piece of glass and metal, and then back again into more knowledge about galaxies.

Recently he's been running calibration tests on one of the components of the instrument. This component will capture light from galaxies, and then smear out the light into spectra; long ribbons of rainbow colours. With these spectra you can measure how much light is emitted by different chemical elements at different



wavelengths. It's an old concept, a reliable method of studying stars and galaxies. But the instrument that Jon is building will be the most sensitive ever; it will look at the most distant galaxies in the Universe.

Jon used to be a chemist and has a chemist's love of matter that goes beyond words and symbols into something material. He likes to talk about the differences between the two forms of carbon. One is soft and malleable, and the other is hard diamond. They're the same carbon atoms, but the differences are due to the way that the electrons are arranged around their cores. It always amazes Jeanette that electrons; particles whose masses are thousands of times smaller than those of the atoms, can have such a profound effect on the physical nature of substances.

But today, Jon doesn't talk about his work, he tells her about his family. 'My great-grandfather was an astronomer too. He was the other man on Eddington's 1919 expedition.' As he talks, the pair of spectacles perched high on his head catch the light and glint at Jeanette. It's as if he has an extra pair of eyes.

Jeanette's puzzled. Eddington carried out an expedition just after the First World War to measure the curvature of light rays around the sun during a solar eclipse, and prove that Einstein's theory of general relativity was correct. She isn't aware that any other astronomers were involved.

Jon carries on, 'There were actually two expeditions to carry out the experiment, on separate islands. Eddington was in charge of one of the trips, and my great-grandfather led the other one. His name was Crommelyn.'

Still no recognition from Jeanette. Jon rolls his eyes. 'Don't you know anything? It was famous.'

'So, is it in your blood then? Did you learn how to use a telescope at your great-grandfather's knee?'

'Don't be daft, he died years before I was born. But I was intrigued by him. He took part in this world-famous experiment,

in fact it was his data and not Eddington's that were actually used. And he's forgotten now. He just went straight back to his country house and spent the rest of his life there. I'm not sure he was even particularly interested in general relativity. He was more interested in the practicalities of doing the experiment. You know, they had to lug a huge telescope halfway up a mountain on a tropical island off the north coast of Brazil. It was an amazing thing to do. It took them months and months. Eddington's expedition had bad luck, it was cloudy where they were, and they only got a few usable photographs. But Crommelyn struck gold. And then when it all became public it was Eddington who got the glory, even though it was Crommelyn's photographs that were used.'

'Didn't he want any of the glory?'

'Oh, I don't think so. From what we can tell, he seems to have been quite happy to slip away. He spent the rest of his life hunting for comets.'

Jeanette remembers something else. 'Wasn't there something odd about that experiment? Didn't Eddington just find what he wanted to find? The data were pretty poor.'

'He had great — intuition. He discarded the data that he didn't like, without explaining why.'

'That's terrible. You'd never get away with that nowadays.'

Jon laughs at her. 'Of course not, Miss Morality.'



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The speed of light is a constant. This is so amazing Jeanette can't stop grinning whenever she thinks about it. Speeds of ordinary things like people, cars, or trains, are not constant. They vary depending on how they're measured. A train whizzing past a station at eighty miles an hour appears to be stationary to the people travelling in it. But light isn't like that. It's always moving, always the same.

Sometimes when she's whirring around the universe, trying to decide where to live, what to eat, and who to sleep with, she forgets about the constancy of light. She can only see the fireworks around her, and hear the boom boom boom of her heart. But when things are still and quiet, there is a flash of torchlight, and she detects it, and is grateful.





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On the first evening of her week-long observing run in Chile, Jeanette stands on the mountaintop, examining her reflection in the metal dome. There's nothing else here. No people, apart from the astronomers and the support staff. No buildings, apart from telescopes where they work at night and the residential lodge where they sleep during the day in a curious inversion of normal life, like a photographic negative.

As the light drains from the sky, she hurries back inside to the control room to continue working with Maggie. Sunset is a precariously narrow time trapped between the fat certainties of day and night. Each evening they compete against the darkening sky to ensure that the telescope is set up correctly, so that none of the precious night is wasted.

At this telescope, the control room is off to one side, curved around the edge of the dome which houses the telescope. The astronomers and the telescope operator sit in this room all night, sending instructions to the telescope and scrutinising the resulting images.

There are no windows in the control room, so it feels small and claustrophobic. There is no way of actually looking at the night sky unless you go outside. She couldn't believe this on her first observing run. It seemed nonsensical, to cross the world to use a telescope and not even be able to look through it. Now she is resigned to the fact that the only way of understanding the world is to see it displayed in rectangles on the computer screen. She still wishes they could actually work inside the dome, but this hasn't happened in Chile for several years now. The heat from their bodies would make the air shiver and distort the images formed by the telescope mirrors, so they're hidden away. There's still one telescope in Australia where the astronomer has to sit in a small metal cage behind the primary mirror. She did that once, when she was a student, and remembers the view of the sky with the stars flashing past as she swooped around the dome, and the exhilarating feeling of being on a fairground ride in the dark, with the



cage rattling around her.

They don't talk much to each other at this early stage. Maggie tells the telescope operator how they want to use the telescope, and gives him the list of coordinates of their galaxies.

Then the first image of the night appears; two galaxies entwined, with their dense white centres twisted by tidal forces. It's easy to see the dynamics of this interaction; the gravitational attraction between the galaxies making them move towards each other, and most likely merge together in the future after some unimaginably long period of time. But the image isn't quite right, the light from the galaxy centres spills over to contaminate the fainter, outer regions which aren't showing up well. Jeanette and Maggie adjust exposure times and try again.

Jeanette's worried that the set-up of the telescope is wrong, that their observations won't work. And then she wonders why she's worried about this. If things don't work out, if she can't get another job, this may be her last trip to Chile. Understanding galaxy evolution is such a small thing to worry about, compared to the rest of her life.

But the next image is stunning. The galaxies look like underwater creatures, trailing ghostly arms through the black sea of the sky. Jeanette starts to relax. It will work. She has a future.

She and Maggie go on several observing trips each year, and they always have the same conversations. They talk about the galaxy clusters they're studying, and the way that the larger galaxies in those clusters seem to interact and feed off each other, cannibalising smaller ones and spewing out stars and gas. They talk about the food at the residential lodge, and complain about the endless avocado sandwiches. They remind each other of the possibly apocryphal student who lost control or lost patience, no one is ever sure which, and froze a tomato in the vat of liquid nitrogen before smashing it against the curved wall of the telescope dome. Jeanette can imagine the tomato shattering on the metal, its brilliant red shards melting



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and congealing. There's no trace of red now. Everything in the dome is drab grey; the walls and floor, even the long tube of the telescope itself. The slot cut into the dome for the sky provides the only respite. If you go into the dome at night, the stars above your head seem more real than the dull telescope.

The night's routine is established and Jeanette is able to escape outside for a moment. As ever, after spending any time in the control room, her senses feel almost smothered in the new-found space, and the sheer weight of the starlight takes her by surprise. There are so many stars in this sky they seem like a substance, eating away at the blackness. Inside, it's easy to forget that the sky is not actually a paper chart or a database, but a reality rich with knowledge, an ocean teeming with discoveries waiting to be caught. Standing out here, with the cool air brushing across her face, and the dust beneath her boots, it's obvious that the control room is just a shadow-world, a bad copy of this one.

Out here, the sky can be overwhelming. It presses down on her and there's nowhere else to go, nothing else to look at. But it's not the same sky as at home, where only a few stars are able to hammer through the heavy, dirty air. There, they are so distant and spread apart that it makes her feel lonely just to look at their feeble light. Here, she is in a crowd.

She quickly gets her sea legs as she navigates her way around, from the jewels of the Southern Cross to the fragile puff of the Large Magellanic Cloud, and on to the crowded centre of the Milky Way. There is a rhythm involved in moving from star to star that she can match to her breathing, so at the peak of each breath she arrives at a star and then swings herself onto the next one, spanning the darkness.

Then she goes back inside and back to the relentlessness of the data gathering. The telescope acquires each galaxy, spends ten minutes locked onto it and then reads out the resulting image to their screen. The rest of the night is parcelled up into these ten minute slots, and



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Jeanette and Maggie must spend their time staring at the screen, scrutinising pixels.

'I hate this job,' Jeanette mutters to herself at one point, aware that she is gritting her teeth.

'Pardon?' Maggie is so close to the screen, her nose is practically touching it.

'I mean, it's ridiculous. We're not looking at the sky, we're not even looking through the telescope.' She waves a hand around the dusty room. 'We're shut in here, cut off from reality, and we're trying to interpret it via a computer screen.'

Maggie turns away from the screen, and gestures at all the computers, the racks of tapes, the remains of their sandwiches and the crowds of dirty mugs. 'Looks pretty real to me.'

'I suppose so.' Jeanette's mood subsides. Right now, she just wants to go to sleep. She doesn't want to check images for cosmic ray glitches or dust in the telescope. She doesn't want to look at the spectrum of a galaxy and have to convert the numerical wavelengths into corresponding colours in her mind. Four thousand angstroms is blue, six thousand is green and eight thousand is red. Add them all up and you get a rainbow you'll never see, at least not here in the control room. This place is about controlling your emotions and analysing data, so she shuts up and carries on, trying not to yawn.

The next day she wakes up in the late afternoon and hurries outside to check for clouds in the sky. The observatory is surrounded by mountains and she finds herself disliking them for their perfection and unreality. The rocks are too jagged, the sky too uniformly blue, everything is too precise here. There are no distractions, no bushes or grass to blur the lines of the earth. No animals or birds to break the relentless silence. She wants to scuttle away and burrow under imaginary damp leaves and into forgiving earth. She longs for Edinburgh, with its uneven pavements and grubby shop fronts. She misses the unpainted windows of her flat, even the stains on the

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carpets. Shortcomings go unnoticed there. Here, everything stands out in sharp relief against the mountains.

She's vaguely aware that bad things happened in this country some time ago. The first time she came here, soldiers manned roadblocks all along the Pan-American highway. She remembers having her passport inspected by a bored teenager in an army uniform, when she was on an interminable bus journey up to the observatory from Santiago. But none of the people at the observatory, neither the European astronomers nor the Chilean telescope operators, talk about politics. They swerve around it, as if avoiding a dead animal on the road.

That night the sky clouds over and Jeanette and Maggie can't do anything. The telescope is set up and calibrated and the list of objects to be observed is marked in different colours according to priority, but they just have to wait for the cloud to clear. It happens occasionally even at such high altitudes, but there's still a sense of uselessness and fatigue in the control room.

Maggie's supposed to be writing a paper, but Jeanette notices that she spends most of her time staring at the wall, as if it's a proxy for the sky.

The telescope operator is talking on the phone in Spanish, and eating biscuits at the same time. His desk is covered with layers of newspapers and biscuit wrappers, archaeological evidence of years of observing.

'What happened with your last job application?' Maggie swings round to face her.

'Nothing.' Jeanette doesn't want to think about it.

'Was it a permanent lectureship that you were applying for?'

Jeanette just nods.

'Well, did you get any feedback, at least?' Maggie persists.

'Nope. Nada.' She may as well have flushed her application down the loo.

Maggie goes back to studying the wall. 'Perhaps you're being too



ambitious. Nearly everyone at our age is still a post-doc. Just wait a bit. Be patient.'

Jeanette sighs. It's ok for Maggie, she seems content to be a post-doc, changing jobs every two years, moving house, shifting about the world with all her belongings in her suitcase. She's based in Heidelberg now, but before that it was Japan, and before that it was — Jeanette can't even remember. She wonders what it's like, being foreign all the time.

The telescope operator has finished his lengthy phone call and is now talking to Maggie, who can speak Spanish. Jeanette can't tell what they're talking about, and the meaningless words buzz irritatingly about her head. She looks at Maggie for enlightenment, but gets no response. She feels ignored.

She decides to check her emails for the nth time, but there's nothing interesting; just another one from the invisible woman, asking if she wants to meet up again. She contacted this woman through an advert a few months ago, after a particularly lean patch. But when they finally met, she walked past the woman three times before noticing her. Later, as they wandered along the beach at Cramond, and the wind hustled sand and rubbish around their feet, Jeanette found herself being hemmed in by the woman's small words. When she tried to respond, her descriptions of her own life sounded equally circumscribed. She hoped the physical act might rescue them. But in bed, she tried not to shudder as the woman said, 'That was nice,' with a wistfulness in her voice which infuriated Jeanette. She left shortly afterwards, slamming the front door behind her, and the noise it made gave her more satisfaction than the tiny orgasm she had had buried under the sheets, the woman's diligent hands working on her.

Now, she deletes the email without replying. Surely, it's better to be alone, with no limitations?



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At three in the morning she's eaten her sandwiches and drunk a lot of coffee. They have to wait here all night, just in case the sky does clear. Now the wind is picking up, which may be a good sign; it may sweep the cloud off the mountains.

She gets up and walks around for a bit, but then Maggie sighs and puts down her pen. They look at each other but don't speak. Jeanette decides to leave the room.

It's not that dark outside; the cloud diffuses the moonlight and smears it out across the sky. Jeanette stands just outside the door and listens to the wind. It has a curiously tinny sound as it bounces off the metal domes; someone might be rattling a baking sheet in the sky.

She sets off down the path that leads away from the telescope. She knows she shouldn't be wandering around by herself at night without telling anyone where she is going. Those are the rules here. It's supposed to be dangerous. But Jeanette has had enough of being stuck inside; out here is better.

But out here is too windy. She battles against the wind like a cartoon character but she can barely stand up. She stumbles back up the narrow tarmac path, and by the time she is back at the telescope she's out of breath. She pushes at the door to the control room, but as it opens she can hear voices; Maggie and the telescope operator. She listens for a moment; the voices are hushed, as if they're telling each other secrets. She doesn't want to listen any more. She shuts the door and creeps around the side until she comes to another door. When she opens this one, it takes her straight into the dome.

Inside, she stands on the circumference of the room looking up at the rectangle of sky. When her eyes get used to the dark she sets out for the centre, where the telescope is. She has to resist an impulse to reach out and stroke it, as if it were an animal shackled to the concrete floor. The dome judders as the wind picks up and she wonders if it could be unpeeled from its base and made to sail into the sky.

The thin amount of light in here can only glint off small pieces of things. It hints at something else, something larger buried in the



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darkness. A nest of wires coils out of the back of the telescope and snakes away across the floor to the door on the far side. Beyond that is the control room. Here in this mysterious space, it seems impossible to go through that door and enter a world of other people, fluorescent light, and stained coffee cups. Perhaps she can shelter here, at least for the rest of tonight.

But suddenly there is a tearing, crashing sound above her, not safely in the sky, but right here in the dome. And as she stands, terrified, the light that she has grown used to diminishes and disappears. She is in darkness. And it's not the velvet-soft darkness that she imagined, the darkness that would wrap itself around her and make friends with her and stroke her face. This darkness continues to be filled with a sharp noise, no longer from above her but right in front of her. She senses something fly past her face, cold air brushes her cheeks and she screams. She falls to the floor.

Light hits her eyes.

'Jeanette?' Maggie's voice sounds thin. More footsteps; the telescope operator is there too. 'Are you ok?'

She manages to get to her knees, but realises she is shaking.

'For God's sake! What are you doing in here? Why didn't you tell us?'

She remains kneeling on the cold floor in front of them. Perhaps she is thanking them for something.

'It's a good thing we heard you scream. Juan managed to stop the telescope.'

So it was the telescope that almost hit her. She wants to shut her eyes again, to block it all out. People have been killed by telescopes. She's standing now, her feet reasonably firm on the floor. She can't see anything beyond the torchlight burning into her face. Someone grabs her elbow and she realises it is Maggie trying to steer her away. As she moves, something inside her mouth loosens and she's finally able to speak. 'What happened?'

'Juan was parking the telescope for the night. He didn't know you

were in here.' They're back in the control room now. Maggie pushes her into a chair and sits down opposite her. 'Why did you leave?'

'Why not? Nothing was happening.' She can detect a tiny shred of guilt in Maggie's words. If this were serious, they would all be in trouble, not just her. But going into the telescope dome without telling anyone is a cardinal sin, she would be in the most trouble. Now, she's not sure why she did it. She just wanted to be in a different place. She stares over Maggie's head at a star chart pinned to the wall.

'What were you doing in there?'

Aldeberan, Betelgeuse... The names of the stars are comforting. And it must almost be the end of the night by now, almost time to go to the residence and sleep. She's aware that Maggie wants her to speak. Riga, Altair, Andromeda... Maggie's hair is twisted around one hand and her eyes look too small, as if they've retreated from something. Perhaps she is upset by what happened. How does Jeanette know what Maggie feels? Behind them, out of sight, she is aware of the telescope operator. He hasn't spoken since she entered this room. His version of events is unknowable to her, and she thinks she prefers it that way.

'Why did you take the risk?'

She wishes she knew the answer to that. 'It's alright, Mags, I'm fine.'

But Maggie persists. 'You can't do things like that. It's not fair to me or to Juan. You're not the only one here.'

'Look, I just needed a bit of space.' She tries to laugh. 'You know what it's like being cooped up in this room with the same people night after night.'

'That's our job, Jeanette. It's what we do.' And Jeanette realises, surprised, that Maggie's voice is hard. Perhaps Maggie really might be fed up with her.

Perhaps she should just throw herself into her work and not do anything else. She knows plenty of other astronomers who live like that. There's someone at Cambridge who never goes anywhere apart



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from his office and the canteen. He became a professor at the age of twenty-nine. She wonders what he thinks about on cloudy nights.

The next afternoon she sits in the canteen at a table by herself and watches the other astronomers staring out over the mountains and sky, waiting for the evening.

There are no differences to the days here; time goes round in circles and the sky rotates overhead. That's what makes Jeanette want to scream, to be boxed in by time as well as space.

That night the control room is silent. Jeanette and Maggie sit at opposite ends of the room, the telescope operator in between them. Jeanette knows she should speak, should explain why she behaved the way she did. But she's not sure if she can trace the thread of her actions from cause to effect. Why did she decide to go into the dome? She can't think of a reason. Boredom? Curiosity? No real reason at all. But that won't do for Maggie. So much of their work here is driven by routine; setting up the telescope each evening, taking the calibration images, working methodically through the list of targets. This is not a place to be impulsive, to take risks.

There are two ways of measuring time at a telescope; two separate displays on the console tell Jeanette the ordinary earth-based time, and also sidereal time. The time of stars. The two loop round each other, one lagging behind the other and then leap-frogging it, depending on the time of year. Tonight the sidereal time is two hours behind the ordinary time and Jeanette can't stop staring at the large red numbers ticking away, even though it reminds her of her mother compulsively watching the TV. Watching and waiting for the future to be brought to her, because the present is so unbearable.

'Jeanette, look at this!'

It's four in the morning, the dead hour when all you can do is try and stay awake, but Maggie sounds alert, excited even. This is almost the first thing that Maggie has said to her all night so, intrigued, she



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stands behind her to get a better look at the screen, yawning discreetly into her hand.

She sees oval blobs of different sizes, the largest as big as a thumbnail, and there are about thirty of them making up a cluster of galaxies. A thin arc, no wider than a couple of pixels, appears to join two galaxies near the centre of the image.

'Nice,' says Jeanette, but something is puzzling her. 'That's the wrong galaxy.' She points at one of them, at its faint whirlpool arms.

'What do you mean?'

'We already know its redshift — so it's not in the cluster.' Maggie doesn't reply, but Jeanette has to carry on. 'It must be an interloper.'

They're both silent now. Neither of them needs to say the obvious; that the interloper can only appear to be connected to the other galaxy through being superimposed on it in this two dimensional image. But according to its redshift that's impossible; the standard Big Bang model says that a galaxy's redshift is a measure of its distance. Two objects with different redshifts are at different distances and they can't be physically connected in the way that these galaxies appear to be.

'The link looks real, though.'

'It does, doesn't it?'

They smile at each other. They don't know what it means, but it is unexpected, and therefore interesting. Not many unexpected events happen in their work; usually they do observations for which they have already predicted the results. This is the drawback to working in a well-established science where the main theory is sketched out and all they are doing is colouring in the details.

Maggie pats the empty chair next to her, and Jeanette sits down.

'We should repeat the observation, make sure it's not just a cosmic ray or a random fluctuation,' says Maggie.

'Make it longer this time, we can probably go to twenty minutes before the centre gets saturated.'

The next twenty minutes take a long time. They don't normally



repeat their observations. She thinks what a privilege it is to be able to wind back the clock and reconstruct a splinter of reality. You can't do this in everyday life, can't just say to a soon to be ex-lover, 'Hold on, rewind, let's go back to that bit where we still had hope and try again, differently this time.'

The repeat observation is finished and they hold their breath as the image is read out onto the screen. The link between the galaxies is still there and Maggie lets out a whoosh of air. The telescope operator carries on reading his newspaper, it's not his job to get excited about these things.

They spend the rest of the night analysing the images in more detail, their heads bent together in front of the screen. Maggie adds the images together and cleans them of contamination, while Jeanette does a quick calculation of the size of the link. Here, on this image, it's just thirty pixels long, but out there it's larger than the entire Milky Way. She squints at it from the side of the screen; perhaps it holds a secret, like Holbein's anamorphic skull. It's really very faint.

'Take a look at this,' Maggie says, a few minutes later. She's done something to the data so the link looks brighter, and more obvious.

'You've smoothed it?' asks Jeanette.

'Yup.'

'That's kind of cheating.' Now the pixels have been smeared over each other so each one shows some of the light from its neighbours.

'Makes it look good, though?' Maggie is grinning.

'Why don't we write a separate paper about this?' Jeanette asks, 'We could probably do it really quickly.'

'Does it warrant an entire paper?'

'Maggie!' Jeanette laughs incredulously. 'This could be amazing! This could be evidence against the entire Big Bang theory!'

Maggie sits up, 'You're not serious! One tenuous link between two galaxies at different redshifts? What about all the evidence in favour? We're not dismissing that.'

'I'm not saying one thing or the other. But it's a major observation.'



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Let's publish it and see what happens.'

'You actually think people are going to look at this and question — everything?'

Jeanette hesitates. 'Yeah, maybe. That's what we do. Or what we should do. Ask questions.'

She's asked questions all her life, and now she's an adult the questions get answered. Or at least listened to.

When she leaves the observatory a few days later, travelling down the tightly curled mountain roads back to bird song and rain, the realisation of what they want to publish begins to dawn on her. Are they seriously suggesting that they have evidence that the Big Bang model is wrong? They'll have to be cautious. As long as they stick to the actual data and avoid drawing any conclusions it should be ok.

But it's not until she's on the plane going home, listening to the comforting hum of the engines, that she's able to see the sky clearly again.



THEN

One summer, when Jeanette is ten years old, her home explodes. An intense flash of light slams through all the rooms, sucking up the air and noise and colour, making everything brilliantly white, impeccably silent.

When the light dies down, the house is empty. Oh sure, all the furniture's in the same place; the sofa where her mother sits in the afternoons, staring at air. The dining table and chairs where Jeanette and her parents eat without speaking, trying not to look at the empty fourth chair.

She wants to make it sound like it used to. When she gets home from school, she bangs the garden gate, flings open the front door, shouts, 'Hello,' and stamps down the hallway into the living room.

'Keep the noise down,' her mother whispers from a huddle on the sofa.

Kate used to get up early each morning and go to the pool for swimming practice. When she was very young she learnt how to tuck all her hair into her tight blue swimming cap, so that not a single wisp blurred her outline as she swam in perfect straight lines up and down the length of the pool. Occasionally Jeanette came and watched her. She liked the way Kate could push the water aside so efficiently. She always swam as though she was going somewhere, and needed to get there fast.

The other kids made a mess of the water, they splashed too much and churned it up, and the coach shouted at them. He didn't often shout at Kate, but walked along the side of the pool as she swam, keeping pace with her.



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Sitting there watching Kate felt like sitting in a clean, hard box. All the kids had neat, tidy bodies. The coach was small and compact, with a bullet head and legs tightly corded with veins. Jeanette felt out of place as she lolled against the seat, surreptitiously sucking sweets and picking scabs on her knees, trying to remember when Kate had started swimming. There had always been swimming. Kate had swum for ever.

One night Jeanette hides in her bedroom to get away from her parents. She opens the window to get a better view of the dark-covered land outside. The sky's clear and she sees the stars; they feel like some sort of blessing. She tilts her face up to them for so long that she notices they're moving. They're not keeping pace with the moon, which is arcing high overhead; they have their own smaller motion. As they swing around she wants to grab onto a chain of them and be carried away from here. Fascinated, she watches a single faint star in the apple tree, its light just visible as it moves through the tips of the branches.

That night, she learns that it takes a star an hour to travel the width of the tree. An hour of not having to sit with her parents downstairs. An hour of feeling the air brush her face and cool the hot, sad, congested mess inside her.

At first, just after the explosion, everything seems shocking and clear, as if the world has been replaced by another one overnight. One that superficially looks the same, but which is a copy of the real one, like some sort of TV programme where actors try to be proper people, but you can tell they're faking it. When Kate returns, the world will be real again. But Kate doesn't return. Not after her funeral when Jeanette goes back to school and her parents to work, and they all have to pretend everything is normal. Kate could return now, Jeanette thinks, and it wouldn't be too difficult. She might be cross about the funeral, or maybe she would find it funny. Jeanette doesn't know.

Then more time goes by, and the actors get better at acting, or



perhaps Jeanette forgets what's real and what's fake. But every now and then, she realises that the world isn't just pretend, it's wrong. And still she doesn't know why it happened. Kate's gone but she doesn't know why. Nobody will talk about it. There is just this heavy silence everywhere.

One evening as they're eating dinner she asks her parents, 'Why did it happen?'

They don't say anything, but her mother gives a sort of shiver as if she's cold, although it's quite warm in the house.

So she tries again. 'What happened to Kate?'

Finally her father speaks. 'She drowned.'

Drowned? But she was swimming. She was the best swimmer. The best one in the team, in the whole county. There was talk of Olympic trials. How can you drown if you know how to swim?

'But how could she drown? She didn't just suddenly stop swimming, did she?' She fiddles with her fork while she waits for them to answer, before she realises that they're not going to.

'How did it happen?' She taps the fork on her plate to break the silence. It doesn't make sense. Why won't they tell her what really happened?

'Jeanette.' They refuse to tell her any more so she gives up and lets the silence take over. That night she leaves them in the living room with the television blaring, and she goes upstairs to her room and leans against the window staring at the sky.

The swimming suits are still all around the house, like the discarded skins of dead animals. They lie curled over the radiators, and crumpled in the corners of the kitchen. Jeanette finds one of them in her own laundry basket, but she's afraid to touch it. When she does finally pick it up, it seems too light, as if it could float up into the sky. She's not sure what to do with it, so she scrunches it up and stuffs it under her mattress. She doesn't want to throw it away; Kate may need it. The swimming suits have a sour smell which Jeanette never really noticed



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before, but now it seems ominous, like a siren going off in her head.

Kate died.

She died because she drowned.

No, she didn't die. She swam down a river until she found a hill with a cave hidden in it. In the cave there's a bed draped in satin and she's asleep on this bed, with a knight standing guard over her.

Perhaps she likes being asleep. But Jeanette doubts that. Kate was good at getting up early for swimming practice. So perhaps she's lying on the bed just pretending to be asleep, but really she has one eye open and she's staring at the knight, wondering why he's wearing armour and why she's lying on satin sheets.

Perhaps she got ill and died in the swimming pool. But she hadn't been ill that morning. Jeanette can't remember the last morning, which means that it must have been a normal one; Kate crashing down the stairs at six o'clock, her father waiting by the front door, eyes half shut with tiredness.

Satin sheets would be very slippery. You'd slither off the bed. Velvet is better, Kate used to have a dark blue velvet hair ribbon. It's probably still in her room. Jeanette thinks about going to get the hair ribbon but stays where she is, gazing up at the sky and wondering what her parents know, and what they won't tell her, about Kate's death.

Jeanette's father spends a lot of time gardening. He used to give Jeanette and Kate things he found out there, handing them over as if they were priceless gifts. Rosehips or daisies, or, once, a tiny pale blue eggshell. One side of it was shattered, but if you turned it over you could pretend it was still whole. They argued over who could keep it and Kate won. It's still in her room.

There are lots of other things in her room, but Jeanette doesn't want them anymore. She wanted them when Kate was still here, but now that Kate has gone, something's happened to the things. It



makes her feel heavy inside, just thinking about the bird's egg, or the oyster shells, or the swan feather. It makes her feel tired.

There's other stuff too, to do with Kate's swimming. All the medals and cups and certificates and curled up yellowy newspaper clippings used to be crowded together on the sideboard in the dining room. There wasn't enough space for all of it, not after Kate started winning really big cups with wide handles.

One morning Jeanette's the first to get up. This happens quite a lot, now that her father doesn't have to take Kate to her training session. There's no shape, no centre to their days without Kate's swimming to keep them in order.

But if nobody else is around, it's easier to pretend that things are normal, and that her mum is asleep and Kate and her dad are at the pool. This is what she's used to. On mornings like this, the lump inside her melts, just a bit, and she can breathe easier. But when she takes her breakfast into the dining room, all the stuff has gone, and the surface of the sideboard is flat and bare. There are faint rings in the dust, like ripples on a swimming pool. Jeanette blows on the dust, making it rise into the air. The rings are even fainter now.

Just one photo of Kate is left. A school photo; Kate in her uniform grinning at the camera. Jeanette can't work out how far away it is, even though she knows it's on the sideboard. Space seems to have buckled so that it's simultaneously in the middle of the room, hovering under the lightbulb, and also at the edge, near the garden. She can't look at it any more, the lack of perspective makes her feel dizzy.

Jeanette eats her breakfast in the kitchen to avoid the photo. In the evening, when they're in the dining room, she's aware of the photo lying in the dust. The three of them eating in silence and a photo of the fourth. Is this what happens when you die? Do you turn into an image?

One day, even the photo is gone and the sideboard is polished clean. The photo is never seen again, but that doesn't help the silent words.



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They get ready to move house. This was planned when Kate was still here. In fact the reason for moving house was to live nearer to the big Olympic-sized swimming pool, so Kate didn't have to spend so much time travelling to her training sessions. Now, there is no point in moving house, but it happens anyway.

Before they move they have to pack up everything in the old house. It's like the end of an elaborate game, where all the pieces are scattered all over the board and they have to be put back into the box. Except that this game seems to consist of the pieces getting thrown away.

Jeanette's mother kneels on the kitchen floor and crams a crumpled cushion cover into an already overflowing cardboard box marked 'RUBBISH' in neat black pen on each side. Around her are heaped piles of stained tea towels, a crooked tower of saucepans missing their lids, a stack of postcards so faded that it's impossible to tell where they come from, a wind chime with its strings tangled together, and a dog collar.

'Whose is this?' Jeanette picks up the dog collar. It's old and worn, almost disintegrated in places.

'When I was a kid, we had a dog. A lassie dog.'

'And you've kept its collar all this time?'

'It's going now.' And the collar gets squashed into the box.

The door to Kate's room stays shut during all the packing activity and Jeanette is afraid to open it. She doesn't know what she's more afraid of, seeing a bare room, or seeing all her sister's belongings still endlessly waiting for her sister. The patience of things, the way they will just sit and wait like dumb animals, makes her want to cry.

Finally, the day before they move, she plucks up the courage to creak open the door. The room is empty. In fact, there's an astonishing absence of things. In every other part of the house, the packing cases are piled up in the middle of rooms and surrounded by abandoned tat and rubbish, like a beach at low tide covered in strands of seaweed



Pippa Goldschmidt

and chunks of old plastic. Here, there is nothing. Not even any boxes. Just indentations on the carpet showing where the furniture was. Jeanette goes over to where the bed should have been and lies down on the floor, looking up at the ceiling. Perhaps there are clues up there. But the ceiling is bland white. She doesn't remember ever looking at it before. All she can do is take great bites of the air, gulping it down inside her. There's nothing else of Kate that she can take with her.





The Falling Sky

She's in her sister's bedroom, trying to tidy up. But something's wrong. The schoolbooks piled on the desk aren't covered in dust, the way they should be by now after all these years. The handwriting on the sheets of paper is still crisp and black, not faded.

She picks up the waste paper basket and tries to shake the contents into a bin bag, but the pieces of crumpled paper, old tissues and pencil shavings refuse to move. They disobey the force of gravity and stay poised in mid air, the way her sister used to hover above the diving board before plunging into the pool.

The swimming suit on the radiator is still wet, but the water isn't running down the grooves of the radiator and soaking into the carpet the way it used to.

Her sister's bedroom is the only place in the universe which defies entropy and time. Which stays locked in the past.