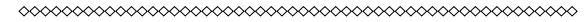




JANNA LEVIN



Life on a Möbius Strip

Einstein famously said, “Only two things are infinite: the universe and human stupidity.” Then he added, “And I’m not so sure about the universe.”

And it’s true, there’s a realistic possibility that the entire universe is finite; it’s mathematically and physically possible. There was a period of time in my research when I was obsessed with this idea. I was fixated on the implication that you could leave the Earth and travel in a straight line to a planet in a distant galaxy on the edge of the observable universe and realize the galaxy was the Milky Way that you had left behind you, and the planet you had landed on was the Earth. There were also weirder possibilities that the Earth was reconnected like a Möbius strip – if you took a left-handed glove on that same trip, it would come back right-handed.

The hazard for a scientist working on something so esoteric is the possibility that it just might not be true or it might not be answerable. I felt myself kind of navigating this precipice between discovery on the one side and obscurity on the other side. At the time I was working at Berkeley, living in San Francisco. I would spend a lot of time in the coffee shop across the street from my apartment. I was trying to find some kind of tangible connection to a more earthbound reality. And it was there that I met this guy named Warren.

Warren came charging past me the first day I saw him and pinned me with his blue eyes and said, “You’re the astrophysicist.” Which I knew. And then he had so much momentum after having built up the nerve to say this to me that he kept walking; he didn’t wait for my response. He went right out of the coffee shop and down the street.

And so it begins.

Warren is just everything I would never want in a man. He can’t drive, he’s never had his name on a lease, he’s by his own confession completely uneducated, he’s a self-professed obsessivecompulsive. He comes from a really tough part of working-class Manchester. He writes songs like

*Daddy was a drunk, daddy was a singer,
daddy was a drunken singer.*

Murdered in a flophouse, broke and drunk... .

You get the idea. It’s not good. So naturally I’m completely smitten. And he is mesmerizing. He has all this intensity, all this energy. He’s full of opinions. He was going to start his own music station called Shut the Folk Up.

I said, “The gag is going to be that nobody’s going to understand his accent. Nobody will understand a word he says! He’ll just rant.” It was a Manchester accent, but it did seem even more tangled than one would expect. It was quite a brogue. He would talk so fast that the words would just slam together – it was really undecipherable. But when he sang, this big, beautiful, warm tone just lifted out of him; it was like this old-timey crooner, this rare crisp and clear sound. So I used to tell him, “If there’s anything that’s really urgent that you need me to understand, just, like, sing it to me, OK?”

So, Warren and I started seeing each other, and he never asked me about my work, which was quite a relief

from my own sort of mental world. And it’s like we were both in exile. Warren was in exile from his actual country, and I was in a kind of mental exile. And he would obsess all day about music and melody, and I would obsess all day about mathematics and numbers. And it was like we were pulling so hard in such opposite directions that the tension kept both of us from floating away.

After a few weeks of seeing each other, Warren decides we should live together, and he’s going to convince me that I should let him move in. So he gives me this argument – some fairly inventive logic, which I’m a little suspicious of, and laden with all kinds of Manchester slang I don’t really follow. But Warren can convince me of anything, just anything, so I relent, and he says, “I’ll be right back!” He’s so excited; he comes back in less than an hour, and he’s moved in. He’s carrying his guitar and whatever he can carry on his back, because he has this philosophy, “If you can’t carry it, you can’t own it.” Right? So he moves in with me.

And my parents are thrilled. Their recently Ph.D.-confirmed daughter – I have a Ph.D. in theoretical physics from MIT – is living with an illegal immigrant who can’t spell words like “nonviable,” “unfeasible.” Even our friends are full of doubt. Our good friend, the musician Sean Hayes, is writing lyrics like

We’ll just play this one out until it explodes

Into a thousand tiny pieces

What’s your story universe

You are melody, you are numbers

You are shapes, and you are rhythms

Warren and I hear this, and we’re pretty sure it’s about us. And I’m filled with doubt too. I mean, this is a crazy situation; it’s totally improbable. And my fellowship’s coming to an end, and the only other offers I have are in

England. And Warren hates England. He slumps when he describes the low-hanging skies and the black mark of his accent there, and the inescapability of his class, but he says, “Baby, you know, I’ll follow you anywhere. Even to England,” as though I’m bringing him to the acid marshes of hell.

But he makes himself feel better by convincing me we have to sell all our stuff, because you can’t own what you can’t carry. So we’re sitting on the steps of our apartment, and I watch stuff that I’ve been carting around my entire life just disappear.

People come in and out of the coffee shop and stop to talk to us and say, “So you’re the astrologer?”

And I say, “Well, no, I’m more of an astronomer.” And they ask me about how is it possible that the universe is finite. And I explain how Warren and I could go on this trip from San Francisco to London, and if we kept going in as straight a line as possible we’d eventually come back to San Francisco again, where we started. Because the Earth is compact and connected and finite, and maybe the whole universe is like that. And Warren and I make this leap, his left hand in my right hand, and we board a plane to the UK.

And it does suck. We have this very difficult wandering path, but finally I land a fantastic fellowship at Cambridge. It’s beautiful. But not before we spend a few weeks in a coinoperated bed-sit in Brighton. If you ran out of pound coins, your electricity went off and the lights went out. We often ran out of pound coins, and towards the end we were so despondent we would just sit in the dark. I could hear though not see Warren say things like “At least I don’t have to look at the wood-chipped wallpaper,” which for some reason really depressed him, this very English quality of the wood-chipped wallpaper.

But eventually we get to Cambridge, and my work takes a beautiful turn. I start working on black holes, these massive dead stars tens of kilometers across spinning hundreds of times a second ripping through space at the speed of light. This is very concrete compared to my previous research. So I’m excited about the direction my work’s turning in. I’m in Hawking’s group in Cambridge, which is very exciting, but he doesn’t pay me any attention at all. But I’m invited by Nobel laureates to Trinity College for dinner, and I get to watch this ceremony of dinner at this old, beautiful college from the privileged perch of high table.

Meanwhile Warren’s down the road in another college washing the dishes because it was the only job he could get. And as things go on, we both start to retreat into our mental worlds, me in my math and Warren in his melody, but it’s like we’re not really keeping each other from floating away so much anymore.

Eventually it starts to rain, and it rains forever. Woody Allen said, “Forever’s a very long time, especially the bit towards the end.” And a rainy winter in Cambridge is a very long time. Warren picks up a mandolin; he starts playing these Americana

bluegrass tunes over and over again, you know, *na na na na na na*. And it’s this manic soundtrack to our mounting insanity, and eventually we explode. It takes about six months of that relentless rain, but we explode, and it’s over. And all we see is how improbable we are; we see that we’re nonviable and unfeasible. Which are words, by the way, that Warren can spell by then.

We both leave. We pack up everything we have, each of us just what we can carry. We end up in a bus terminal in London, clutching each other. I’m waiting for Warren to convince me, because he can always convince me, that

we can do the impossible. But it's like the light's gone out in his eyes, and I disappear into London and he just ... disappears. And the silence is total.

A graduate student of mine recently said to me, "The emotional dimension is the least interesting part of the human experience." And I know scientists are odd, but I agree. I was like, "Yeah, I know what you mean." So it's difficult for me to recount how dark those nights were. Even in my worst moments I knew that my despair was just sort of not interesting. I needed to get back to mathematics and the universe and this connection because in its sheer magnitude it would diminish the importance of my personal trials.

I searched all over London until I found a perfect warehouse to move into, because I wanted to connect with a more earthbound reality while I was doing my research. I found the perfect place. It had broken windows and shutters. It was dead empty – no bathroom, nothing. I had the windows replaced, and I had a bathroom installed, and my unit became a part of this artists' community building on the east end of London, along the canals.

So I had a great community around me, and I started a new life there, and I started to write. I got a book deal. It was a book about whether or not the universe was finite, and it was a diary about the terror of a scientist working on that really frightening divide between discovery and total oblivion. And it became a parallel story about Warren, about the unraveling of an obsessivecompulsive mind. I think if I'm honest it was also a way of still hanging on to him. This book kind of came out of me fully formed; it took one year.

When the book was finished, I delivered it to my publisher, and in part fueled by the London gloom and in part fueled by nostalgia, I decided I wanted to go back to

San Francisco just to recuperate. To go back to where the book actually starts, when we sell all of our stuff on the steps in San Francisco.

I go back to California, and I take these beautiful walks in the city. San Francisco is so beautiful. And I find myself, despite myself – because I tell myself not to do it – walking past my old neighborhood. I end up going past my old coffee shop, and I'm going like three miles an hour, you know, there are like five thousand feet in a mile, and there's like three thousand, six hundred seconds in an hour, so I'm going about four and a half feet, I figure, per second. It takes me about two seconds to go past this coffee shop window.

In that time, because I'm looking at my building, my old apartment, full of sentiment, what I don't realize is that on the other side of that window, inside the coffee shop, is Warren, who, after I left him in the London bus terminal, went back to California, came back to London, went to France, came back to London, and just recently returned to San Francisco, and got a job in the coffee shop, where he regaled the patrons with stories about his travels. He was so uprooted. But the light was back on in his eyes. And as he's turning around to deliver a coffee, he lifts his head to see me, in those two seconds, walk past the frame of the window. And he shouts, "It's self-service!"

He stumbles out of the coffee shop. People are grabbing muffins and coffees, they're like, "Warren! What's up?!" And he's trying to get out of the coffee shop, trying to grab on to the handle of the door. He keeps banging his head. It's like a bird trying to get out the window. And all of the sudden, the door swings open and deposits Warren in front of me.

You often think, *What am I going to say when I bump into my ex?* But, it's just this electric moment between

us. There's this swell of warmth, and we laugh that we're back where we started on this very spot in San Francisco.

I try to give him the essential data. I'm living in London Fields, and he tells me I've moved onto the block he lived on when he was nineteen and squatting in London. Out of the whole city of London. And he recognizes the names of all the locals I can rattle off. And by the end of the conversation he's saying, "I'm coming with you back to London aren't I?"

And I'm thinking, *Are you out of your mind?* I mean, what woman in her right mind is going to let this lunatic come back to London with her? There is no way.

About a year later, we're married. Our rings, which were made by a friend of ours, are stamped with the lyrics "Melody and Number, Shapes and Rhythms" with no small dose of irony and defiance. About a year after that, we're having a baby, and we're laughing at how improbable this kid is.

We have no idea. When this kid is born, he is so beautiful, and afterwards a young medical resident comes charging into my hospital room, and he's so excited he's beaming. And I'm thinking, *He sees how beautiful this boy is.* But he's carrying an X-ray, which he slaps on the window of my hospital room so the light can come through, and I can see it better. But I still don't know what I'm looking at.

He says, "Your son's heart is on the right side." And he doesn't mean the correct side, he doesn't mean the left side. He means my son's heart is on the *right* side.

And all I can think in this terrifying moment is *Get Warren.*

And the resident says, "Your son has dextrocardia with situs inversus; all his organs are on the opposite side."

And I say, "Get Warren."

And the resident tells me he's so excited, because he never thought he'd ever see anything like this. To his knowledge, nobody else in the hospital's seen it in real life. And he's describing studies for me that are made up of only twelve cases because the numbers are so rare.

And then Warren's there, and he's saying in that rough, raw, beautiful accent what only he can convince me of, the totally impossible. He's saying, "He's perfect."

And our now eight-year-old son is a perfectly formed mirror image of the more conventional human anatomy, a very rare and unlikely alignment. It's as though Warren and I took our left-handed code on a Möbius strip around the universe and brought back this right-handed boy. And that boy, as intense and spirited as his father, is like a living testament to the incredibly improbable trip that we're on.



JANNA LEVIN is an astrophysicist and writer. She has contributed to an understanding of black holes, the cosmology of extra dimensions, and chaotic spacetimes. Her novel, *A Madman Dreams of Turing Machines*, won the PEN/Bingham prize and was runner-up for the PEN/Hemingway. She is the author of a popular science book *How the Universe Got Its Spots*. Janna is a professor at Barnard College of Columbia University and is a Guggenheim Fellow.