

Physics of Fire

Donna Little

The smoky air is a thick curtain I must push through, but there is no other side. I breathe it like the atmosphere of an inhospitable planet. It rankles, harsh and bitter, in my sinuses and mouth and throat and lungs. I don't just smell it, I taste it. I can still taste the acrid soot. Gritty particles coat my rumpled jeans and T-shirt, my skin and hair. When I blow my nose later, my mucus is streaked black. I have inhaled the ashes of my own possessions.

In the remnants of my burned house, the crew of Fire Restoration, Inc. zips strips of packing tape across fresh boxes, sealing up whatever can be kept. They are telling jokes, laughing. Just another fire clean-up to them. I stand at the foot of stairs, look up at black walls. Part of the roof is gone, sky and trees where the roof and the side of the house used to be. I climb the stairs, sneakers crunching broken glass from the shattered skylight. It gets hotter and hotter as I climb, not just because this is Georgia in July. The fire inspector told me that a house fire can get up to 1200 degrees Fahrenheit. The house still holds the heat.

The hapless inspector is standing in what used to be the bathroom doorway at the top of the stairs, raking up cinders and charred chunks and shoveling them into green garbage bags to send to the lab.

I step through the soggy, sooty rubble of sheetrock chunks and broken glass and ruined clothes and books and pictures into my bedroom.

For the first time, what is behind my walls has been exposed. There is a whole landscape I have never seen before, pipes and wires and foil ducts and metal strips and brackets and nails and plywood and charred pink and yellow blankets of insulation. Beams half-eaten by flame and turning to charcoal. I look out the jagged edges of the missing walls to treetops and the long fall to the ground.

What is left of the walls is black and spidered with cracks, pocked with holes that look like someone has punched them. The fire inspector tells me this is where the screws got so hot they popped out of the sheetrock, shot like bullets. He tells me that's the last thing that happens before total conflagration. *You were lucky the firefighters got here when they did, he says. One more minute and there would have been nothing left to save.*

I was in Maine when the fire happened. The fire inspector and the insurance company's arson investigator are trying to figure out what started the fire and have no answers. No wires, no candles, no lightning, no accelerant.

Why? I ask them. *How?*

The fire inspector hikes up his Carhartts and scratches his beard and shrugs. "Maybe there were bees in them walls," he says. "One of them big bees' nests can generate a lotta heat."

I try to picture the great nest, the friction of the wings, the buzzing and rubbing, a papery labyrinth inside your walls. I knew there was a hornet's nest inside the front porch roof. I could see the little holes in the wood where they went in and out. I could hear the loud hum in summer and knew it had to be a pretty big colony.

But the bathroom where the fire started is in the back of the house. I never heard a hum. I never heard the slightest rasp of wing on wing.

No matter how many times I picture a nest in that wall, I can't make it burst into flames.

I can take the sight of my own bed, the pocked cinder scars on the headboard and footboard. But when I go across the hall to my daughter Cassie's room, what I can't take is the scant burnt remnants of my daughter's bed, her room a black cave. She will retain nothing from the first seven years of her life.

*

A few days later, the arson investigator from Travelers Insurance called me. *We have some questions*, her message said.

So did I.

The fire wasn't an act of God. In the insurance world, an act of God is a tornado, hurricane, flood, earthquake. It would have been easier to take if there had been lightning that day. If I could have heard what the thunder said.

But it felt like an act of God. Was it a God-slap? A blast of wrath? A test? A purge?

I needed it to mean something. I needed it to not be random.

In the Catholic Church in which I was raised, I learned about fire from the banks of candles at the back of the church. I'd slide a nickel in a little metal box to get a saint to pray for me, each tiny flame a prayer.

I learned about fire from the mosaic in the Shrine of the Immaculate Conception. We'd go there some Sundays, locking our doors as we drove past the slum children, arriving at the massive white cathedral, high-domed. A sanctuary the length of a football field, and over the altar a mosaic of weight-lifter Jesus in a red robe, three flames shooting out of the sides of his head in three different directions.

Tiferet

They reminded me of my father's blow torch, the crackle of the flame as he fixed a pipe, saying *stand back, stand back*. Such a long walk to the altar.

I learned about smoke from the incense that the priest swung at us on high holy days, waving a long gold pole tipped with a clinking chain, dangling a gold censer filled with hot coals and spices, frankincense and myrrh.

I learned about ashes from the smear of ashy oil on my forehead on Ash Wednesday, the burnt remains of the palms we waved on last year's Palm Sunday. I learned about sack cloth and ashes, Job repenting in dust and ashes, rending his garments.

For Moses, God was the bush that burned but was not consumed.

Abraham prepared a pyre on which to burn his son Isaac, whom God had commanded him to sacrifice.

At Pentecost, the Holy Spirit appeared as tongues of fire.

But hell is also the unquenchable fire that burns the chaff after the wheat is gleaned.

How can fire be both God and the absence of God?

The churches of my childhood were a closed fist, like the beginning of the children's hand game: *Here is the church. Here is the steeple*. Fingers locked. But never getting to the punchline: *Open the doors* – hands parting, palms exposed -- *and here's all the people*. Fingers wiggling madly, laughter.

Never getting there.

*

My house was part of my façade. My carefully constructed image. I had my Ikea desk and my Pier 1 wicker chairs and my Pottery Barn vase and my Bed, Bath and Beyond comforter and my Best Buy laptop and printer and TV and DVD player. Cassie had her Barbie collection and her \$100 American Girl dolls, five of them, her My Little Pony and Polly Pocket and Little Pet Shop. I made sure that there was no plastic toy, no Carter's or Osh Kosh or Children's Place outfit, she did not have.

My house was a lie.

No one knew what went on inside those walls, no one at the college where I taught, not even my parents, whom I had lied to about my failing marriage, about the causes of the divorce that happened right before the fire.

No one went into the basement and saw a mattress on the floor surrounded by a sea of trash, candy wrappers and soda cans and cookie packages and empty ice cream cartons and pages and pages of obscure nineteenth-century Georgia history documents.

No one knew how, much too late, I'd begged Richard. "What are you on? Just tell me what you're on."

His eyes watery, bloodshot, pupils huge. Feverishly bright, like an oil rig on fire that will burn til there's no oil left.

His addiction had already burned away all his body fat. His face, skin over skull like the charred beams of a burned down house. His teeth had been crumbling and falling out, holes in his smile like punched out windows.

He ran his fingers through his hair, over and over. "Nothing," he said. "Nothing."

Fire will cure you of lying. It will cure you of hoarding. Fire will cure you of the illusion that all things can be fixed.

My walls burned clear through. The ravaged sheetrock, my whitewashed walls torn down.

If it was an act of God, it was the kind that cures you by tearing you apart, rebuilds you by tearing you down.

*

I started to wonder what fire even *is*. In college I'd taken the one required science class and spent the rest of the time studying literature and languages. Even though my father is a physicist, I'd never taken a single class in physics.

In fact, my father was the *reason* I'd never taken physics. Math did not come naturally to me. When I had to ask my father for help, it ended in disaster. We would sit at the dining room table, him trying to explain to me why it was obvious that if the train left the station at 10:00 going sixty miles an hour it would arrive at the next stop at 11:00. And I would want to know what was the name of the train, and what did the stations look like, and who was on the train and where were they going and why.

My father, however, represented *order* to me, both in his unwavering Catholicism and in his mathematical certainty.

"What is the equation for fire?" I asked my father. We were sitting in my parents' kitchen. I'd traveled to in DC for a conference but got sick, and my parents came and brought me home. He was wearing his trademark outfit, jeans, white Seinfeld sneakers, a white long-sleeved polyester button-down shirt with a pocket right over his heart, where he keeps his pens and his glasses.

He knew why I was asking, but he was still pleased to be asked, as if he had been waiting all his life, all my life, for me to ask this question. He cleared his throat, the gravelly uh-hum that precedes his disquisitions.

Tiferet

“Heat is high energy particles, they’re jiggling really fast.” He picked up the bottle of Amoxicillin I’d picked up from the CVS that morning and started zooming it around like a little boy with a toy spaceship. “And cold is lower energy particles.” He picked up the Flonase bottle next to the meds.

The Flonase was lethargic. It just sat there in his hand. But then he crashed the Amoxicillin into the Flonase and waved them both around wildly. “When the hot particles encounter the cold particles, the cold particles start zinging around too. High energy molecules excite other molecules to become high energy.”

“So fire is contagious,” I said.

“Yes. When a hot particle hits a colder one, it becomes hot too.” The Amoxicillin knocked into the Flonase again. “A burn front is created. And it doesn’t stop until all the fuel and all the oxygen is gone.”

“So my house was the fuel?” I asked him.

“Yes. And when things get hot enough, they turn from a solid to a gas.”

“So the fire was my stuff turned into gas?”

“The carbon of your furniture, your walls and floors, it all turned into carbon dioxide.”

“What’s the ash then?” I ask him. “Why is anything left at all?”

*

In Judaism and later in Christianity, for something to count as a sacrifice, it had to be destroyed, to bleed or to burn.

A prayer is the smoke from a mind on fire. A long distance call across the thinnest wire, faint voice carried across space and time.

Burnt offerings, incense -- a 911 call. A smoke signal. A flare from a downed plane or a sinking ship.

Smoke is a grappling hook flung into the ether. The tiny particles our messenger, the closest we can get to spirit.

Smoke bangs on God’s door, trying to find the place where he hides himself from us. Like my parents used to lock themselves in their room or banish me to mine. Two bedrooms side by side, light years apart. *A mighty fortress is our God.*

Smoke bangs on God’s door, saying, *Hey, I killed something for you, will you listen now? Is that enough, will it ever be enough?*

Maybe the poet I would later become was born in hard wooden pews and on red velvet kneelers, with ashes on my head and smoke smell on my clothes and holy water on my fingers.

Maybe the physicist my father became was born in his black altar boy robes, watching the transubstantiation of bread to flesh and wine to blood. Learning how a substance changes from one thing to another. States of matter. Leaves to fire, fire to smoke, smoke to ash.

Learning how three things can be One, a particle and a wave at the same time.

A prayer, a physics problem, a poem: all codes. All asking: what is the fire? What is water? What must I do to be saved?

*

The arson investigator finally called me. “I don’t have an answer,” she told me. “They didn’t find any accelerants. We’re going to have to rule this one inconclusive. Cause Unknown.”

The insurance company paid for my daughter and me to stay in a hotel for the first few weeks after the fire, then installed us in a furnished apartment where we lived for six months while the house was being rebuilt. Everything in that apartment was beige: the walls, the couch, the carpeting, the kitchen counter. They gave us six of everything: six forks, six knives, six plates, six bowls, six glasses. Everything matched. Nothing was ours.

Before the fire, I had talked to my mother on the phone about once a week, my father only on holidays to exchange an awkward greeting. Long distance. But after the fire I called him every day, asking him how much it should cost to gut a house, to reframe the top floor, to put up new sheetrock, to insulate it, to replace the roof.

Right after my fire, he was terrified that he had caused it, because about a year before the fire he had rewired some lights in the ceiling. He couldn’t sleep for days after the fire, staying up all night obsessing on how it must have been his fault. It took me a while to convince him that the origin point for the fire wasn’t anywhere near the lights that he had installed.

In our phone conversations, he’d ask me for the dimensions of a room and he’d get out his calculator and look up the material and labor costs and crunch the numbers. If a house is 2400 square feet and all the walls are ripped out, how much sheetrock will it takes to replace those walls? How much paint to paint them? If a roof is 30 feet long and 30 feet wide, and one quarter of it is missing, how many shingles will it take to replace it?

I emailed him all of the photos of the burned house, a couple hundred photos of charred wood and gapping holes in the side of the house and the roof. I didn’t

Tiferet

want my mother to see the photos; they were too brutal. But I wanted him to see them. Someone had to share the burden.

While we were living in the beige apartment, Cassie broke her ankle at cheerleading practice. A few weeks later, I had foot surgery for a piece of glass that had embedded in my foot and gotten infected. We were both on crutches at the same time. The lady in the apartment below us complained that our thumping was too loud.

It seemed fitting that we could not walk, that we were disabled and slow, awkward and leaning. I kept thinking about *Jane Eyre*, Mr. Rochester after the fire missing an eye and a hand, blind in the eye he had left. Real fairy tales don't end happily. They end with the main character being maimed in some way, their hands or feet cut off, or swallowed by a wolf or walking on knives. Only in the expurgated Disney versions is there a happily ever after.

The worst of the insurance plagues was dealing with my mortgage company, Wells Fargo. It got so bad during that six months of fruitless phone calls that I started to make a game out of getting the detached voices on the phone to say something personal. I was often crying, so it wasn't a game exactly. It was like playing a slot machine over and over again, knowing that you were going to lose, but hoping against hope it would be different this time.

I'd ask them things like whether they had children, or whether they had ever been inside a house that had burned, or what their office was like. I had tried, early on, to find out if there was a physical location I could drive to. I pictured myself driving hundreds of miles, showing up on their doorstep, refusing to leave until they signed off on all my paperwork. But I was told there was no physical location. "But where *are* you?" I would say, crying in frustration. "I need *help*." And they would say "We aren't anywhere. We only talk on the phone."

By the end I just babbled. I figured it didn't matter much what I said. It hadn't mattered yet. "My daughter drew a picture of our house at school today," I'd confide. "In the picture, the house is still there, but there are orange and red flames coming out of the roof."

It took me six months of phone calls, and finally faxing letters threatening legal action to corporate executives whose names I found in Internet searches, to get that money released.

*

Each night when I tucked my daughter into bed, I obsessed on the image of her burned bed. It seemed like the altar-pyre that Abraham built to burn Isaac, to sacrifice his only son. It seemed like a manger gone terribly wrong. The beds we

build for our children, makeshift and precarious. The danger we put them in just by being born. All the ways we can't protect them. All the ways that we are sometimes the one that lights the fire.

I thought about how my mother used to make the sign of the cross on my forehead when she kissed me goodnight, like the Israelites put blood on their doorposts in Egypt, so the plagues would pass them by. I wondered why it didn't take with me, why my seal failed. But I started to do it with Cassie, a quick smudge like Ash Wednesday, though no one could see the ashes but me.

At my cousin's baby's funeral, a few years before the fire, my father tried to tell me about physics. The baby lay in a white cradle-coffin in the chapel, and my father was trying to explain to me that nothing ever really disappears, that there are infinitesimally small particles called plancks. He told me then that some physicists believe there is a fourth dimension where lost things go, things that only seem to have died.

Like all our burned belongings. I picture it like the Island of Unwanted Toys in the Rudolph cartoon. Across a landscape of icebergs and monsters and time, the bent, the broken, the poorly made, the irretrievably lost. If only we could cross over, bring it all home.

*

I started going to a Methodist Church called Liberty Hill, which held services in an old textile mill by the railroad tracks and the Etowah River. It used to house giant looms making denim and sewing jeans. The building had been long abandoned and from the outside looked like an industrial ruin, rusty metal frames around cracked opaque pebbly windows. But inside it had been renovated, the wide planks of heart pine refinished, gleaming, exposed brick and beams rough but homey. A warehouse sanctuary: provisional, temporary, re-purposed. Instead of an altar, a plywood stage decorated with secondhand furniture from the Goodwill. No windows, but an old window frame hung from a wire and a homemade cross, a couple of beams nailed perpendicular.

Right after the fire, people from the church had given us money, gift cards, bags of clothes and toys, even though we'd just started going there and they really didn't know us. The first time that we went, Cassie cried and fussed throughout the service, and I don't think I would have made it if a woman who I later knew as my friend Kathleen hadn't leaned over and said to me, a stranger, "Stay strong, Mom." So I did.

The pastor asked me to give a guest sermon about the fire. It was the weekend my parents were scheduled to visit me and Cassie in the beige apartment. I was

Tiferet

terrified for them to hear my testimony. I did not think they would approve of me spilling my guts to a bunch of Protestants in a warehouse.

My left collar bone ached as I climbed the makeshift stage and began to speak, my parents in the back row. I told them that the fire had set me free. That I knew now had little I actually needed. That I had learned to let my hands be open and empty.

That there is, as Isaiah promises, beauty from ashes. That beauty looks a whole lot like mess, with people in it.

*

The last time I visited my Dad at his cabin in Maine, a giant whiteboard graffitied with strings of Greek letters and numbers leaned against the back wall. Next to it, the picture window opened to the choppy water of Lake Ambajejus, and looming above it the Knife's Edge of Mt. Katahdin, the thin ridge to the summit. We climbed it together when I was twelve.

Now his main pursuits are trying to solve physics problems that no one else had ever solved, and fishing in the deep waters of Lake Ambajejus.

I've come to see what a gift it has been to come to the mountains and lakes of northern Maine all these years. My sense of the sacred comes at least as much from my time in the wilderness as from my time in church. The dense, fragrant forest, the massive boulders, the mountain creeks spilling to rivers and lakes. In that place, you couldn't help but wonder: what is it all made of? Where did it all come from?

His equations, his fishing, my poems: plumbing the depths, hoping to catch something quick and bright and glistening. To name the cosmos, gravity and force, air and water, stars and stardust. What really lies at the center and what can be found at the edges. Where and how life begins and ends. What holds it all together.

Now that I had started asking him to explain physics to me, he reveled in the lessons. That September day, he was trying to explain wave-particle duality. He was working on the Holy Grail of quantum physics. To challenge his remaining brain cells, he said.

"The position of particles is never known. Or rather, you can know where a particle is but not its speed, and vice versa. It's called the Heisenberg Uncertainty Principle," he said.

"I'm familiar with uncertainty," I said.

"Also, a particle can be everywhere until you come to the point of measuring it and then it condenses."

"I know. And the cat in the box can be alive and dead at the same time. I never really got that."

"Reality is always contingent," he said.

"I know," I said. "I'm figuring that out. But contingent on what?"

He shrugged. "It's all about probability. There are no absolutes."

"What do you mean?" I said. "You're a mathematician and a Catholic. Your whole life is absolutes."

"They're all working theories," he said. "Quantum theory, Catholicism. All physics can do is prove that this model is better than that model. You go with the theory that best explains the facts, until a better one comes along."

"What are you telling me?" I asked. "It's not like *I* thought you had all the answers, but I thought that *you* thought you had all the answers."

He laughed. "Catholicism helps me live my life. Quantum theory lets us build a cell phone. They work."

"So when you look at the lake," I said, pointing to the blue-gray expanse of moving water, waves crashing loudly along the rocky shore. "Do you see it as a physics problem? Do you see particles and waves and equations?"

"When I look at the lake, I see Newton's Law. Force equals mass times acceleration. The waves are a surface effect from winds blowing across the lake. ater receives momentum from the air, it passes that momentum to neighboring sections of water."

"Kind of like fire," I said. "Contagious. But," I asked shyly, embarrassed to ask but wanting to know, "When you look at nature, do you ever see God?"

He looked down, cleared his throat. "The other night, when you and I and Cassie were outside looking at the stars, I saw the wonder of God's creation, not a physics equation."

*

When my parents came to visit us in the beige apartment that Thanksgiving, Cassie and I were still thumping around on our crutches. We cooked Thanksgiving dinner in the beige kitchen, ate it at the beige table. My mother brought a box of my childhood Christmas ornaments. It was good to have things that had been saved, that had once been mine. We bought a small tree and hung the peeling snowman I had bought my brother once and my Rudolph with the broken antler.

I got out the box of sooty documents I had salvaged from the house, wrapped in a black Hefty bag and stashed inside a plastic bin. When I opened it the fire smell filled the small apartment. I had stacks of receipts, stacks of estimates, stacks of insurance documents and Wells Fargo documents and bank statements.

Tiferet

Together, my Dad and I made lists. He wrote columns of numbers in his spidery handwriting. I would recognize it anywhere -- angular, small but emphatic, long horizontals. It hasn't changed since I watched him write equations on paper napkins at the dinner table as a child. He used to give me his abandoned graph paper tablets and computer print-out cards and reams of computer paper with the perforations on the sides, "read-out paper," we called it. My first writing paper.

Together, we crunched numbers. We did the math.

*

I decided to get baptized again at Liberty Hill. They practiced full immersion baptism in the river behind the church, and I wanted to be baptized in the river. The closest I would ever come to God. When I told Cassie I was doing it, she insisted on doing it too. We both needed a new beginning.

I wore jeans and a T-shirt from Cassie's cheerleading team that said "Cassie's Mom" on the back. We trudged out the back door of Liberty Hill, down the loading dock and past the rusting vehicles and box cars. Not long before, a mini tornado had spun through Canton and scissored the trees along the river. It looked like a giant chainsaw had hacked a brutal path. An act of God. Maimed trees, amputated limbs. That was about right.

There were five of us being baptized that day. One was a mentally challenged man who had been homeless and whom the church had taken into its fold. They told me that he insisted on being baptized every time they did it. And why not?

We clambered down the eroded bank. The river there is flat and brown and cold. The strangest part was walking in, fully clothed, feeling the water fill up my shoes and flood my clothes. So cold it made me laugh as I slid toward the preacher. The muddy riverbed sucked at my sneakers. Pastor Jamey was wearing fishing waders, overalls. He told me to cross my arms over my chest, like a body in a casket. He put an arm around my shoulders and an arm beneath my back and pulled me backwards and under.

Where did the water come from that cleansed me? It had run for miles through North Georgia fields and forests, gathering silt and sediment, run-off and oil, chicken shit and clean rain. It flowed on, past my submerged body, carrying parts of me, particles and plancks, the clean and dirt of me, to Lake Allatoona, to Cartersville, to the Coosa, down through Alabama and into Mobile Bay, into the cold depths of the Gulf of Mexico.

I felt the pull of the current and I let my fight go. I understood that I was dying and I wanted to die. I had already died. This was just the belated funeral. The fire doused, forever. The person I used to be floated down the river, down and down to the sea.

Pastor Jamey pulled me up sputtering and laughing. I staggered to the shore and pulled Cassie in. It was harder to watch her go down because I understood this was also her death. I understood how close we had come to not surviving, and that it was me that had let it happen. That I had not kept her safe.

But she rose again, we both did, mud-slick and shivering. Our new selves staggered forth, up the slippery bank, wobbly as fawns. The church ladies and church men on the bank pulled us out like midwives catch the just-born baby. They hugged us and got muddy and towed us off, swaddled us in blankets. We were safe.

*

“What holds the universe together?” I asked my father.

“Forces of attraction,” he said. “Gravity, which holds planets circling around the sun. Positive and negative charge of protons and electrons holds atoms together. They form a powerful bond.”

“Is there a bond that does not break?” I asked.

He picked up a big jar of Planter’s peanuts from the table. Mr. Peanut was leaning debonairly on his cane. “This is the proton,” he said. He yanked his black reading glasses out of his shirt pocket. “This is the electron. They are pulled together,” he said, knocking the glasses into the peanuts. “But centrifugal force and acceleration counterbalance the pull and send them into orbit.” The plastic glasses were orbiting Mr. Peanut, around and around.

“So I’m confused,” I said. “Does nature tend toward disorder or order?”

“Yes,” he said.