

WHEN
BREATH
BECOMES
AIR



PAUL KALANITHI

Foreword by Abraham Verghese

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EVENTS DESCRIBED ARE BASED on Dr. Kalanithi's memory of real-world situations. However, the names of all patients discussed in this book—if given at all—have been changed. In addition, in each of the medical cases described, identifying details—such as patients' ages, genders, ethnicities, professions, familial relationships, places of residence, medical histories, and/or diagnoses—have been changed. With one exception, the names of Dr. Kalanithi's colleagues, friends, and treating physicians have also been changed. Any resemblance to persons living or dead resulting from changes to names or identifying details is entirely coincidental and unintentional.

You that seek what life is in death,
Now find it air that once was breath.
New names unknown, old names gone:
Till time end bodies, but souls none.

Reader! then make time, while you be,
But steps to your eternity.

—Baron Brooke Fulke Greville, “Caelica 83”

FOREWORD

Abraham Verghese

IT OCCURS TO ME, as I write this, that the foreword to this book might be better thought of as an afterword. Because when it comes to Paul Kalanithi, all sense of time is turned on its head. To begin with—or, maybe, to end with—I got to know Paul only after his death. (Bear with me.) I came to know him most intimately when he'd ceased to be.

I met him one memorable afternoon at Stanford in early February 2014. He'd just published an op-ed titled "How Long Have I Got Left?" in *The New York Times*, an essay that would elicit an overwhelming response, an outpouring from readers. In the ensuing days, it spread exponentially. (I'm an infectious diseases specialist, so please forgive me for not using the word *viral* as a metaphor.) In the aftermath of that, he'd asked to come see me, to chat, to get advice about literary agents, editors, the publishing process—he had a desire to write a book, *this* book, the one you are now holding in your hands. I recall the sun filtering through the magnolia tree outside my office and lighting this scene: Paul seated before me, his beautiful hands exceedingly still, his prophet's beard full, those dark eyes taking the measure of me. In my memory, the picture has a Vermeer-like quality, a camera obscura sharpness. I remember thinking, *You must remember this*, because what was falling on my retina was precious. And because, in the context of Paul's diagnosis, I became aware of not just his mortality but my own.

We talked about a lot of things that afternoon. He was a neurosurgical chief resident. We had probably crossed paths at some point, but we hadn't shared a patient that we could recall. He told me he had been an English and biology major as an undergraduate at Stanford, and then stayed on for a master's in English literature. We talked about his lifelong love of writing and reading. I was struck by how easily he could have been an English professor—and, indeed, he had seemed to be headed down that path at one point in his life. But then, just like his namesake on the road to Damascus, he felt the calling. He became a physician instead, but one who always dreamed of coming back to literature in some form. A book, perhaps. One day. He thought he had time, and why not? And yet now time was the very thing he had so little of.

I remember his wry, gentle smile, a hint of mischief there, even though his face was gaunt and haggard. He'd been through the wringer with this cancer but a new biological therapy had produced a good response, allowing him to look ahead a bit.

He said during medical school he'd assumed that he would become a psychiatrist, only to fall in love with neurosurgery. It was much more than a falling in love with the intricacies of the brain, much more than the satisfaction of training his hands to accomplish amazing feats—it was a love and empathy for those who suffered, for what they endured and what he might bring to bear. I don't think he told me this as much as I had heard about this quality of his from students of mine who were his acolytes: his fierce belief in the moral dimension of his job. And then we talked about his dying.

After that meeting, we kept in touch by email, but never saw each other again. It was not just that I disappeared into my own world of deadlines and responsibilities but also my strong sense that the burden was on me to be respectful of his time. It was up to Paul if he wanted to see me. I felt that the last thing he needed was the obligation to service a new friendship. I thought about him a lot, though, and about his wife. I wanted to ask him if he was writing. Was he finding the time? For years, as a busy physician, I'd struggled to find the time to write. I wanted to tell him that a famous writer, commiserating about this eternal problem, once said to me, "If I were a neurosurgeon and I announced that I had to leave my guests to go in for an emergency craniotomy, no one would say a word. But if I said I needed to leave the guests in the living room to go upstairs to *write*..." I wondered if Paul would have found this funny. After all, *he* could actually say he was going to do a craniotomy! It was plausible! And then he could go write instead.

While Paul was writing this book, he published a short, remarkable essay in *Stanford Medicine*, in an issue that was devoted to the idea of time. I had an essay in the same issue, my piece juxtaposed to his, though I learned of his contribution only when the magazine was in my hands. In reading his words, I had a second, deeper glimpse of something of which there had been a hint in the *New York Times* essay: Paul's writing was simply stunning. He could have been writing about anything, and it would have been just as powerful. But he *wasn't* writing about anything—he was writing about time and what it meant to him now, in the context of his illness. Which made it all so incredibly poignant.

But here's the thing I must come back to: *the prose was unforgettable*. Out of his pen he was spinning gold.

I reread Paul's piece again and again, trying to understand what he had brought about. First, it was musical. It had echoes of Galway Kinnell, almost a prose poem. ("If one day it happens / you find yourself with someone you love / in a café at one end / of the Pont Mirabeau, at the zinc bar / where wine stands in upward opening glasses..." to quote a Kinnell line, from a poem I once heard him recite in a bookstore in Iowa City, never looking down at the paper.) But it also had a taste of something else, something from an antique land, from a time before zinc bars. It finally came to me a few days later when I picked up his essay yet again: Paul's

writing was reminiscent of Thomas Browne's. Browne had written *Religio Medici* in the prose of 1642, with all its archaic spellings and speech. As a young physician, I was obsessed with that book, kept at it like a farmer trying to drain a bog that his father before him had failed to drain. It was a futile task, and yet I was desperate to learn its secrets, tossing it aside in frustration, then picking it up again, unsure that it had anything for me but, in sounding the words, sensing that it did. I felt that I lacked some critical receptor for the letters to sing, to impart their meaning. It remained opaque, no matter how hard I tried.

Why, you ask? Why did I persevere? Who cares about *Religio Medici*?

Well, my hero William Osler cared, that's who. Osler was the father of modern medicine, a man who died in 1919. He had loved the book. He kept it on his nightstand. He'd asked to be buried with a copy of *Religio Medici*. For the life of me, I didn't get what Osler saw in it. After many tries—and after some decades—the book finally revealed itself to me. (It helped that a newer edition had modern spellings.) The trick, I discovered, was to read it aloud, which made the cadence inescapable: "We carry with us the wonders, we seek without us: There is all Africa, and her prodigies in us; we are that bold and adventurous piece of nature, which he that studies, wisely learns in a compendium, what others labour at in a divided piece and endless volume." When you come to the last paragraph of Paul's book, read it aloud and you will hear that same long line, the cadence you think you can tap your feet to...but as with Browne, you will be just off. Paul, it occurred to me, was Browne redux. (Or given that forward time is our illusion, perhaps it's that Browne was Kalanithi redux. Yes, it's head-spinning stuff.)

And then Paul died. I attended his memorial in the Stanford church, a gorgeous space where I often go when it is empty to sit and admire the light, the silence, and where I always find renewal. It was packed for the service. I sat off to one side, listening to a series of moving and sometimes raucous stories from his closest friends, his pastor, and his brother. Yes, Paul was gone, but strangely, I felt I was coming to know him, beyond that visit in my office, beyond the few essays he'd written. He was taking form in those tales being told in the Stanford Memorial Church, its soaring cathedral dome a fitting space in which to remember this man whose body was now in the earth but who nevertheless was so palpably *alive*. He took form in the shape of his lovely wife and baby daughter, his grieving parents and siblings, in the faces of the legions of friends, colleagues, and former patients who filled that space; he was there at the reception later, outdoors in a setting where so many came together. I saw faces looking calm, smiling, as if they had witnessed something profoundly beautiful in the church. Perhaps my face was like that, too: we had found meaning in the ritual of a service, in the ritual of eulogizing, in the shared tears. There was further meaning residing in this reception where we slaked our thirst, fed our bodies, and talked with complete strangers to whom we were

intimately connected through Paul.

But it was only when I received the pages that you now hold in your hands, two months after Paul died, that I felt I had finally come to know him, to know him better than if I had been blessed to call him a friend. After reading the book you are about to read, I confess I felt inadequate: there was an honesty, a truth in the writing that took my breath away.

Be ready. Be seated. See what courage sounds like. See how brave it is to reveal yourself in this way. But above all, see what it is to still live, to profoundly influence the lives of others after you are gone, by your words. In a world of asynchronous communication, where we are so often buried in our screens, our gaze rooted to the rectangular objects buzzing in our hands, our attention consumed by ephemera, stop and experience this dialogue with my young departed colleague, now ageless and extant in memory. Listen to Paul. In the silences between his words, listen to what you have to say back. Therein lies his message. I got it. I hope you experience it, too. It is a gift. Let me not stand between you and Paul.

PROLOGUE

Webster was much possessed by death
And saw the skull beneath the skin;
And breastless creatures under ground
Leaned backward with a lipless grin.

—T. S. Eliot, “Whispers of Immortality”

I FLIPPED THROUGH THE CT scan images, the diagnosis obvious: the lungs were matted with innumerable tumors, the spine deformed, a full lobe of the liver obliterated. Cancer, widely disseminated. I was a neurosurgical resident entering my final year of training. Over the last six years, I’d examined scores of such scans, on the off chance that some procedure might benefit the patient. But this scan was different: it was my own.

I wasn’t in the radiology suite, wearing my scrubs and white coat. I was dressed in a patient’s gown, tethered to an IV pole, using the computer the nurse had left in my hospital room, with my wife, Lucy, an internist, at my side. I went through each sequence again: the lung window, the bone window, the liver window, scrolling from top to bottom, then left to right, then front to back, just as I had been trained to do, as if I might find something that would change the diagnosis.

We lay together on the hospital bed.

Lucy, quietly, as if reading from a script: “Do you think there’s any possibility that it’s something else?”

“No,” I said.

We held each other tightly, like young lovers. In the past year we’d both suspected, but refused to believe, or even discuss, that a cancer was growing inside me.

About six months before, I had started losing weight and having ferocious back pain. When I dressed in the morning, my belt cinched one, then two notches tighter. I went to see my primary care doctor, an old classmate from Stanford. Her sister had died suddenly as a neurosurgery intern, after contracting a virulent infection, and so she’d taken a maternal watch on my health. When I arrived, however, I found a different doctor in her office—my classmate was on maternity leave.

Dressed in a thin blue gown on a cold examining table, I described the symptoms to her. “Of course,” I said, “if this were a boards exam question—thirty-five-year-old with unexplained weight loss and new-onset back pain—the obvious answer would be (C) cancer. But maybe it’s just that I’m working too hard. I don’t know. I’d like to get an MRI to be sure.”

"I think we should get X-rays first," she said. MRIs for back pain are expensive, and unnecessary imaging had lately become a major national point of cost-saving emphasis. But the value of a scan also depends on what you are looking for: X-rays are largely useless for cancer. Still, for many docs, ordering an MRI at this early stage is apostasy. She continued: "X-rays aren't perfectly sensitive, but it makes sense to start there."

"How about we get flexion-extension X-rays, then—maybe the more realistic diagnosis here is isthmic spondylolisthesis?"

From the reflection in the wall mirror, I could see her googling it.

"It's a pars fracture affecting up to five percent of people and a frequent cause of back pain in the young."

"Okay, I'll order them, then."

"Thanks," I said.

Why was I so authoritative in a surgeon's coat but so meek in a patient's gown? The truth was, I knew more about back pain than she did—half of my training as a neurosurgeon had involved disorders of the spine. But maybe a spondy *was* more likely. It did affect a significant percent of young adults—and cancer in the spine in your thirties? The odds of that couldn't be more than one in ten thousand. Even if it were one hundred times more common than that, it'd still be less common than a spondy. Maybe I was just freaking myself out.

The X-rays looked fine. We chalked the symptoms up to hard work and an aging body, scheduled a follow-up appointment, and I went back to finish my last case of the day. The weight loss slowed, and the back pain became tolerable. A healthy dose of ibuprofen got me through the day, and after all, there weren't that many of these grueling, fourteen-hour days left. My journey from medical student to professor of neurosurgery was almost complete: after ten years of relentless training, I was determined to persevere for the next fifteen months, until residency ended. I had earned the respect of my seniors, won prestigious national awards, and was fielding job offers from several major universities. My program director at Stanford had recently sat me down and said, "Paul, I think you'll be the number one candidate for any job you apply for. Just as an FYI: we'll be starting a faculty search for someone like you here. No promises, of course, but it's something you should consider."

At age thirty-six, I had reached the mountaintop; I could see the Promised Land, from Gilead to Jericho to the Mediterranean Sea. I could see a nice catamaran on that sea that Lucy, our hypothetical children, and I would take out on weekends. I could see the tension in my back unwinding as my work schedule eased and life became more manageable. I could see myself finally becoming the husband I'd promised to be.

Then, a few weeks later, I began having bouts of severe chest pain. Had I bumped into something at work? Cracked a rib somehow? Some nights, I'd wake up on soaked sheets, dripping sweat. My weight began dropping again, more rapidly now, from 175 to 145 pounds. I developed a persistent cough. Little doubt remained. One Saturday afternoon, Lucy and I were lying in the sun in Dolores Park in San Francisco, waiting to meet her sister. She glimpsed my phone screen, which displayed medical database search results: "frequency of cancers in thirty- to forty-year-olds."

"What?" she said. "I didn't realize you were actually worried about this."

I didn't respond. I didn't know what to say.

"Do you want to tell me about it?" she asked.

She was upset because she had been worried about it, too. She was upset because I wasn't talking to her about it. She was upset because I'd promised her one life, and given her another.

"Can you please tell me why you aren't confiding in me?" she asked.

I turned off my phone. "Let's get some ice cream," I said.

We were scheduled for a vacation the following week to visit some old college friends in New York. Maybe a good night's sleep and a few cocktails would help us reconnect a bit and decompress the pressure cooker of our marriage.

But Lucy had another plan. "I'm not coming to New York with you," she announced a few days before the trip. She was going to move out for a week; she wanted time to consider the state of our marriage. She spoke in even tones, which only heightened the vertigo I felt.

"What?" I said. "No."

"I love you so much, which is why this is so confusing," she said. "But I'm worried we want different things from our relationship. I feel like we're connected halfway. I don't want to learn about your worries by accident. When I talk to you about feeling isolated, you don't seem to think it's a problem. I need to do something different."

"Things are going to be okay," I said. "It's just residency."

Were things really so bad? Neurosurgical training, among the most rigorous and demanding of all medical specialties, had surely put a strain on our marriage. There were so many nights when I came home late from work, after Lucy had gone to bed, and collapsed on the living room floor, exhausted, and so many mornings when I left for work in the early dark, before she'd awoken. But our careers were peaking now—most universities wanted both of us: me in neurosurgery, Lucy in

internal medicine. We'd survived the most difficult part of our journey. Hadn't we discussed this a dozen times? Didn't she realize this was the worst possible time for her to blow things up? Didn't she see that I had only one year left in residency, that I loved her, that we were so close to the life together we'd always wanted?

"If it were just residency, I could make it," she said. "We've made it this far. But the problem is, what if it's *not* just residency? Do you really think things will be better when you're an academic neurosurgery attending?"

I offered to skip the trip, to be more open, to see the couples therapist Lucy had suggested a few months ago, but she insisted that she needed time—alone. At that point, the fuzziness of the confusion dissipated, leaving only a hard edge. Fine, I said. If she decided to leave, then I would assume the relationship was over. If it turned out that I had cancer, I wouldn't tell her—she'd be free to live whatever life she chose.

Before leaving for New York, I snuck in a few medical appointments to rule out some common cancers in the young. (Testicular? No. Melanoma? No. Leukemia? No.) The neurosurgical service was busy, as always. Thursday night slipped into Friday morning as I was caught in the operating room for thirty-six hours straight, in a series of deeply complex cases: giant aneurysms, intracerebral arterial bypasses, arteriovenous malformations. I breathed a silent thanks when the attending came in, allowing me a few minutes to ease my back against a wall. The only time to get a chest X-ray was as I was leaving the hospital, on the way home before heading to the airport. I figured either I had cancer, in which case this might be the last time I would see my friends, or I didn't, in which case there was no reason to cancel the trip.

I rushed home to grab my bags. Lucy drove me to the airport and told me she had scheduled us into couples therapy.

From the gate, I sent her a text message: "I wish you were here."

A few minutes later, the response came back: "I love you. I will be here when you get back."

My back stiffened terribly during the flight, and by the time I made it to Grand Central to catch a train to my friends' place upstate, my body was rippling with pain. Over the past few months, I'd had back spasms of varying ferocity, from simple ignorable pain, to pain that made me forsake speech to grind my teeth, to pain so severe I curled up on the floor, screaming. This pain was toward the more severe end of the spectrum. I lay down on a hard bench in the waiting area, feeling my back muscles contort, breathing to control the pain—the ibuprofen wasn't touching this—and naming each muscle as it spasmed to stave off tears: erector spinae, rhomboid, latissimus, piriformis...

A security guard approached. "Sir, you can't lie down here."

“I’m sorry,” I said, gasping out the words. “Bad...back...spasms.”

“You still can’t lie down here.”

I’m sorry, but I’m dying from cancer.

The words lingered on my tongue—but what if I wasn’t? Maybe this was just what people with back pain live with. I knew a lot about back pain—its anatomy, its physiology, the different words patients used to describe different kinds of pain—but I didn’t know what it *felt* like. Maybe that’s all this was. Maybe. Or maybe I didn’t want the jinx. Maybe I just didn’t want to say the word *cancer* out loud.

I pulled myself up and hobbled to the platform.

It was late afternoon when I reached the house in Cold Spring, fifty miles north of Manhattan on the Hudson River, and was greeted by a dozen of my closest friends from years past, their cheers of welcome mixed with the cacophony of young, happy children. Hugs ensued, and an ice-cold dark and stormy made its way to my hand.

“No Lucy?”

“Sudden work thing,” I said. “Very last-minute.”

“Oh, what a bummer!”

“Say, do you mind if I put my bags down and rest a bit?”

I had hoped a few days out of the OR, with adequate sleep, rest, and relaxation—in short, a taste of a normal life—would bring my symptoms back into the normal spectrum for back pain and fatigue. But after a day or two, it was clear there would be no reprieve.

I slept through breakfasts and shambled to the lunch table to stare at ample plates of cassoulet and crab legs that I couldn’t bring myself to eat. By dinner, I was exhausted, ready for bed again. Sometimes I read to the kids, but mostly they played on and around me, leaping and yelling. (“Kids, I think Uncle Paul needs a rest. Why don’t you play over there?”) I remembered a day off as a summer camp counselor, fifteen years prior, sitting on the shore of a lake in Northern California, with a bunch of joyous kids using me as an obstacle in a convoluted game of Capture the Flag, while I read a book called *Death and Philosophy*. I used to laugh at the incongruities of that moment: a twenty-year-old amid the splendor of trees, lake, mountains, the chirping of birds mixed with the squeal of happy four-year-olds, his nose buried in a small black book about death. Only now, in this moment, I felt the parallels: instead of Lake Tahoe, it was the Hudson River; the children were not strangers’, but my friends’; instead of a book on death separating me from the life around me, it was my own body, dying.

On the third night, I spoke to Mike, our host, to tell him I was going to cut the trip short and head home the next day.

“You don’t look so great,” he said. “Everything okay?”

"Why don't we grab some scotch and have a seat?" I said.

In front of his fireplace, I said, "Mike, I think I have cancer. And not the good kind, either."

It was the first time I'd said it out loud.

"Okay," he said. "I take it this is not some elaborate practical joke?"

"No."

He paused. "I don't know exactly what to ask."

"Well, I suppose, first, I should say that I don't know for a *fact* that I have cancer. I'm just pretty sure of it—a lot of the symptoms point that way. I'm going to go home tomorrow and sort it out. Hopefully, I'm wrong."

Mike offered to take my luggage and send it home by mail, so I wouldn't have to carry it with me. He drove me to the airport early the next morning, and six hours later I landed in San Francisco. My phone rang as I stepped off the plane. It was my primary care doctor, calling with the chest X-ray result: my lungs, instead of being clear, looked blurry, as if the camera aperture had been left open too long. The doctor said she wasn't sure what that meant.

She likely knew what it meant.

I knew.

Lucy picked me up from the airport, but I waited until we were home to tell her. We sat on the couch, and when I told her, she knew. She leaned her head on my shoulder, and the distance between us vanished.

"I need you," I whispered.

"I will never leave you," she said.

We called a close friend, one of the attending neurosurgeons at the hospital, and asked him to admit me.

I received the plastic arm bracelet all patients wear, put on the familiar light blue hospital gown, walked past the nurses I knew by name, and was checked in to a room—the same room where I had seen hundreds of patients over the years. In this room, I had sat with patients and explained terminal diagnoses and complex operations; in this room, I had congratulated patients on being cured of a disease and seen their happiness at being returned to their lives; in this room, I had pronounced patients dead. I had sat in the chairs, washed my hands in the sink, scrawled instructions on the marker board, changed the calendar. I had even, in moments of utter exhaustion, longed to lie down in this bed and sleep. Now I lay there, wide awake.

A young nurse, one I hadn't met, poked her head in.

"The doctor will be in soon."

And with that, the future I had imagined, the one just about to be realized, the

culmination of decades of striving, evaporated.

PART I

In Perfect Health I Begin



The hand of the LORD was upon me, and carried me out in the spirit of the LORD, and set me down in the midst of the valley which was full of bones,
And caused me to pass by them round about: and, behold, there were very many in the open valley; and, lo, they were very dry.
And he said unto me, Son of man, can these bones live?

—Ezekiel 37:1–3, King James translation

I KNEW WITH CERTAINTY that I would never be a doctor. I stretched out in the sun, relaxing on a desert plateau just above our house. My uncle, a doctor, like so many of my relatives, had asked me earlier that day what I planned on doing for a career, now that I was heading off to college, and the question barely registered. If you had forced me to answer, I suppose I would have said a writer, but frankly, thoughts of any career at this point seemed absurd. I was leaving this small Arizona town in a few weeks, and I felt less like someone preparing to climb a career ladder than a buzzing electron about to achieve escape velocity, flinging out into a strange and sparkling universe.

I lay there in the dirt, awash in sunlight and memory, feeling the shrinking size of this town of fifteen thousand, six hundred miles from my new college dormitory at Stanford and all its promise.

I knew medicine only by its absence—specifically, the absence of a father growing up, one who went to work before dawn and returned in the dark to a plate of reheated dinner. When I was ten, my father had moved us—three boys, ages fourteen, ten, and eight—from Bronxville, New York, a compact, affluent suburb just north of Manhattan, to Kingman, Arizona, in a desert valley ringed by two mountain ranges, known primarily to the outside world as a place to get gas en route to somewhere else. He was drawn by the sun, by the cost of living—how else would he pay for his sons to attend the colleges he aspired to?—and by the opportunity to establish a regional cardiology practice of his own. His unyielding dedication to his patients soon made him a respected member of the community. When we did see him, late at night or on weekends, he was an amalgam of sweet affections and austere diktats, hugs and kisses mixed with stony pronouncements: “It’s very easy to be number one: find the guy who is number one, and score one point higher than he does.” He had reached some compromise in his mind that fatherhood could be distilled; short, concentrated (but sincere) bursts of high intensity could equal...whatever it was that other fathers did. All I knew was, if that was the price of medicine, it was simply too high.

From my desert plateau, I could see our house, just beyond the city limits, at the base of the Cerbat Mountains, amid red-rock desert speckled with mesquite, tumbleweeds, and paddle-shaped cacti. Out here, dust devils swirled up from nothing, blurring your vision, then disappeared. Spaces stretched on, then fell away into the distance. Our two dogs, Max and Nip, never grew tired of the freedom. Every day, they'd venture forth and bring home some new desert treasure: the leg of a deer, unfinished bits of jackrabbit to eat later, the sun-bleached skull of a horse, the jawbone of a coyote.

My friends and I loved the freedom, too, and we spent our afternoons exploring, walking, scavenging for bones and rare desert creeks. Having spent my previous years in a lightly forested suburb in the Northeast, with a tree-lined main street and a candy store, I found the wild, windy desert alien and alluring. On my first trek alone, as a ten-year-old, I discovered an old irrigation grate. I pried it open with my fingers, lifted it up, and there, a few inches from my face, were three white silken webs, and in each, marching along on spindled legs, was a glistening black bulbous body, bearing in its shine the dreaded blood-red hourglass. Near to each spider a pale, pulsating sac breathed with the imminent birth of countless more black widows. Horror let the grate crash shut. I stumbled back. The horror came in a mix of “country facts” (*Nothing is more deadly than the bite of the black widow spider*) and the inhuman posture and the black shine and the red hourglass. I had nightmares for years.

The desert offered a pantheon of terrors: tarantulas, wolf spiders, fiddlebacks, bark scorpions, whip scorpions, centipedes, diamondbacks, sidewinders, Mojave greens. Eventually we grew familiar, even comfortable, with these creatures. For fun, when my friends and I discovered a wolf spider’s nest, we’d drop an ant onto its outer limits and watch as its entangled escape attempts sent quivers down the silk strands, into the spider’s dark central hole, anticipating that fatal moment when the spider would burst from its hollows and seize the doomed ant in its mandibles. “Country facts” became my term for the rural cousin of the urban legend. As I first learned them, country facts granted fairy powers to desert creatures, making, say, the Gila monster no less an actual monster than the Gorgon. Only after living out in the desert for a while did we realize that some country facts, like the existence of the jackalope, had been deliberately created to confuse city folk and amuse the locals. I once spent an hour convincing a group of exchange students from Berlin that, yes, there was a particular species of coyote that lived inside cacti and could leap ten yards to attack its prey (like, well, unsuspecting Germans). Yet no one precisely knew where the truth lay amid the whirling sand; for every country fact that seemed preposterous, there was one that felt solid and true. *Always check your shoes for scorpions*, for example, seemed plain good sense.

When I was sixteen, I was supposed to drive my younger brother, Jeevan, to

school. One morning, as usual, I was running late, and as Jeevan was standing impatiently in the foyer, yelling that he didn't want to get detention again because of my tardiness, so could I please hurry the hell up, I raced down the stairs, threw open the front door...and nearly stepped on a snoozing six-foot rattlesnake. It was another country fact that if you killed a rattlesnake on your doorstep, its mate and offspring would come and make a permanent nest there, like Grendel's mother seeking her revenge. So Jeevan and I drew straws: the lucky one grabbed a shovel, the unlucky one a pair of thick gardening gloves and a pillowcase, and through a seriocomic dance, we managed to get the snake into the pillowcase. Then, like an Olympic hammer thrower, I hurled the whole out into the desert, with plans to retrieve the pillowcase later that afternoon, so as not to get in trouble with our mother.

Of our many childhood mysteries, chief among them was not why our father decided to bring his family to the desert town of Kingman, Arizona, which we grew to cherish, but how he ever convinced my mother to join him there. They had eloped, in love, across the world, from southern India to New York City (he a Christian, she a Hindu, their marriage was condemned on both sides, and led to years of familial rifts—my mother's mother never acknowledged my name, Paul, instead insisting I be called by my middle name, Sudhir) to Arizona, where my mother was forced to confront an intractable mortal fear of snakes. Even the smallest, cutest, most harmless red racer would send her screaming into the house, where she'd lock the doors and arm herself with the nearest large, sharp implement —rake, cleaver, ax.

The snakes were a constant source of anxiety, but it was her children's future that my mother feared for most of all. Before we moved, my older brother, Suman, had nearly completed high school in Westchester County, where elite colleges were the expectation. He was accepted to Stanford shortly after arriving in Kingman and left the house soon thereafter. But Kingman, we learned, was not Westchester. As my mother surveyed the Mohave County public school system, she became distraught. The U.S. census had recently identified Kingman as the least educated district in America. The high school dropout rate was somewhere north of 30 percent. Few students went on to college, and certainly none to Harvard, my father's standard of excellence. Looking for advice, my mother called her friends and relatives from wealthy East Coast suburbs and found some sympathetic, others gleeful that their children no longer had to compete with the suddenly education-starved Kalanithis.

At night, she broke into tears, sobbing alone in her bed. My mother, afraid the impoverished school system would hobble her children, acquired, from

somewhere, a “college prep reading list.” Trained in India to be a physiologist, married at twenty-three, and preoccupied with raising three kids in a country that was not her own, she had not read many of the books on the list herself. But she would make sure her kids were not deprived. She made me read *1984* when I was ten years old; I was scandalized by the sex, but it also instilled in me a deep love of, and care for, language.

Endless books and authors followed, as we worked our way methodically down the list: *The Count of Monte Cristo*, Edgar Allan Poe, *Robinson Crusoe*, *Ivanhoe*, Gogol, *The Last of the Mohicans*, Dickens, Twain, Austen, *Billy Budd*...By the time I was twelve, I was picking them out myself, and my brother Suman was sending me the books he had read in college: *The Prince*, *Don Quixote*, *Candide*, *Le Morte D'Arthur*, *Beowulf*, Thoreau, Sartre, Camus. Some left more of a mark than others. *Brave New World* founded my nascent moral philosophy and became the subject of my college admissions essay, in which I argued that happiness was not the point of life. *Hamlet* bore me a thousand times through the usual adolescent crises. “To His Coy Mistress” and other romantic poems led me and my friends on various joyful misadventures throughout high school—we often sneaked out at night to, for example, sing “American Pie” beneath the window of the captain of the cheerleading team. (Her father was a local minister and so, we reasoned, less likely to shoot.) After I was caught returning at dawn from one such late-night escapade, my worried mother thoroughly interrogated me regarding every drug teenagers take, never suspecting that the most intoxicating thing I’d experienced, by far, was the volume of romantic poetry she’d handed me the previous week. Books became my closest confidants, finely ground lenses providing new views of the world.

In her quest to see that her children were educated, my mom drove us more than a hundred miles north, to the nearest big city, Las Vegas, so we could take our PSATs, SATs, and ACTs. She joined the school board, rallied teachers, and demanded that AP classes be added to the curriculum. She was a phenom: she took it upon herself to transform the Kingman school system, and she did. Suddenly there was a feeling in our high school that the two mountain ranges that bounded the town no longer defined the horizon: it was what lay beyond them.

Senior year, my close friend Leo, our salutatorian and the poorest kid I knew, was advised by the school guidance counselor, “You’re smart—you should join the army.”

He told me about it afterward. “Fuck that,” he said. “If you’re going to Harvard, or Yale, or Stanford, then I am, too.”

I don’t know if I was happier when I got into Stanford or when Leo got into Yale.

Summer passed, and since Stanford began classes a month later than every other school, all of my friends scattered, leaving me behind. Most afternoons, I’d

trek into the desert alone and nap and think until my girlfriend, Abigail, got off her shift at Kingman's lone coffee shop. The desert offered a shortcut, through the mountains and down into town, and hiking was more fun than driving. Abigail was in her early twenties, a student at Scripps College who, wanting to avoid loans, was taking a semester off to stockpile tuition money. I was taken with her worldliness, the sense that she knew secrets one only learned at college—she had studied psychology!—and we'd often meet as she got off work. She was a harbinger of the *sub rosa*, the new world awaiting me in just a few weeks. One afternoon, I woke from my nap, looked up, and saw vultures circling, mistaking me for carrion. I checked my watch; it was almost three. I was going to be late. I dusted off my jeans and jogged the rest of the way through the desert, until sand gave way to pavement, the first buildings appeared, and I rounded the corner to find Abigail, broom in hand, sweeping the coffee shop deck.

"I already cleaned the espresso machine," she said, "so no iced latte for you today."

The floors swept, we went inside. Abigail walked to the cash register and picked up a paperback she'd stashed there. "Here," she said, tossing it at me. "You should read this. You're always reading such high-culture crap—why don't you try something lowbrow for once?"

It was a five-hundred-page novel called *Satan: His Psychotherapy and Cure by the Unfortunate Dr. Kassler, J.S.P.S.*, by Jeremy Leven. I took it home and read it in a day. It wasn't high culture. It should have been funny, but it wasn't. However, it did make the throwaway assumption that the mind was simply the operation of the brain, an idea that struck me with force; it startled my naïve understanding of the world. Of course, it must be true—what were our brains doing, otherwise? Though we had free will, we were also biological organisms—the brain was an organ, subject to all the laws of physics, too! Literature provided a rich account of human meaning; the brain, then, was the machinery that somehow enabled it. It seemed like magic. That night, in my room, I opened up my red Stanford course catalog, which I had read through dozens of times, and grabbed a highlighter. In addition to all the literature classes I had marked, I began looking in biology and neuroscience as well.

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A few years later, I hadn't thought much more about a career but had nearly completed degrees in English literature and human biology. I was driven less by achievement than by trying to understand, in earnest: What makes human life meaningful? I still felt literature provided the best account of the life of the mind, while neuroscience laid down the most elegant rules of the brain. Meaning, while a slippery concept, seemed inextricable from human relationships and moral values.

T. S. Eliot's *The Waste Land* resonated profoundly, relating meaninglessness and isolation, and the desperate quest for human connection. I found Eliot's metaphors leaking into my own language. Other authors resonated as well. Nabokov, for his awareness of how our suffering can make us callous to the obvious suffering of another. Conrad, for his hypertuned sense of how miscommunication between people can so profoundly impact their lives. Literature not only illuminated another's experience, it provided, I believed, the richest material for moral reflection. My brief forays into the formal ethics of analytic philosophy felt dry as a bone, missing the messiness and weight of real human life.

Throughout college, my monastic, scholarly study of human meaning would conflict with my urge to forge and strengthen the human relationships that formed that meaning. If the unexamined life was not worth living, was the unlived life worth examining? Heading into my sophomore summer, I applied for two jobs: as an intern at the highly scientific Yerkes Primate Research Center, in Atlanta, and as a prep chef at Sierra Camp, a family vacation spot for Stanford alumni on the pristine shores of Fallen Leaf Lake, abutting the stark beauty of Desolation Wilderness in Eldorado National Forest. The camp's literature promised, simply, the best summer of your life. I was surprised and flattered to be accepted. Yet I had just learned that macaques had a rudimentary form of culture, and I was eager to go to Yerkes and see what could be the natural origin of meaning itself. In other words, I could either study meaning or I could experience it.

After delaying for as long as possible, I finally chose the camp. Afterward, I dropped by my biology adviser's office to inform him of my decision. When I walked in, he was sitting at his desk, head in a journal, as usual. He was a quiet, amiable man with heavy-lidded eyes, but as I told him my plans, he became a different person entirely: his eyes shot open, and his face flushed red, flecks of spit spraying.

"What?" he said. "When you grow up, are you going to be a scientist or a...chef?"

Eventually the term ended and I was on the windy mountain road to camp, still slightly worried that I'd made a wrong turn in life. My doubt, however, was short-lived. The camp delivered on its promise, concentrating all the idylls of youth: beauty manifest in lakes, mountains, people; richness in experience, conversation, friendships. Nights during a full moon, the light flooded the wilderness, so it was possible to hike without a headlamp. We would hit the trail at two A.M., summiting the nearest peak, Mount Tallac, just before sunrise, the clear, starry night reflected in the flat, still lakes spread below us. Snuggled together in sleeping bags at the peak, nearly ten thousand feet up, we weathered frigid blasts of wind with coffee someone had been thoughtful enough to bring. And then we would sit and watch as the first hint of sunlight, a light tinge of day blue, would leak out of the eastern

horizon, slowly erasing the stars. The day sky would spread wide and high, until the first ray of the sun made an appearance. The morning commuters began to animate the distant South Lake Tahoe roads. But craning your head back, you could see the day's blue darken halfway across the sky, and to the west, the night remained yet unconquered—pitch-black, stars in full glimmer, the full moon still pinned in the sky. To the east, the full light of day beamed toward you; to the west, night reigned with no hint of surrender. No philosopher can explain the sublime better than this, standing between day and night. It was as if this were the moment God said, "Let there be light!" You could not help but feel your specklike existence against the immensity of the mountain, the earth, the universe, and yet still feel your own two feet on the talus, reaffirming your presence amid the grandeur.

This was summer at Sierra Camp, perhaps no different from any other camp, but every day felt full of life, and of the relationships that give life meaning. Other nights found a group of us on the dining room deck, sipping whiskey with the assistant director of the camp, Mo, a Stanford alum taking a break from his English PhD, and discussing literature and the weighty matters of postadolescent life. The next year he returned to his PhD, and later he sent me his first published short story, summing up our time together:

Suddenly, now, I know what I want. I want the counselors to build a pyre...and let my ashes drop and mingle with the sand. Lose my bones amongst the driftwood, my teeth amongst the sand....I don't believe in the wisdom of children, nor in the wisdom of the old. There is a moment, a cusp, when the sum of gathered experience is worn down by the details of living. We are never so wise as when we live in this moment.

Back on campus, I didn't miss the monkeys. Life felt rich and full, and over the next two years I kept at it, seeking a deeper understanding of a life of the mind. I studied literature and philosophy to understand what makes life meaningful, studied neuroscience and worked in an fMRI lab to understand how the brain could give rise to an organism capable of finding meaning in the world, and enriched my relationships with a circle of dear friends through various escapades. We raided the school cafeteria dressed as Mongols; created a full fake fraternity, complete with fake rush-week events, in our co-op house; posed in front of the gates at Buckingham Palace in a gorilla suit; broke into Memorial Church at midnight to lie on our backs and listen to our voices echo in the apse; and so on. (Then I learned that Virginia Woolf once boarded a battleship dressed as Abyssinian royalty, and, duly chastened, stopped boasting about our trivial pranks.)

Senior year, in one of my last neuroscience classes, on neuroscience and ethics, we visited a home for people who had suffered severe brain injuries. We walked into the main reception area and were greeted by a disconsolate wailing. Our guide, a friendly thirty-something woman, introduced herself to the group, but my eyes hunted for the source of the noise. Behind the reception counter was a large-screen television showing a soap opera, on mute. A blue-eyed brunette with well-coiffed hair, her head shaking slightly with emotion, filled the screen as she pleaded with someone off camera; zoom out, and there was her strong-jawed, undoubtedly gravel-voiced lover; they embraced passionately. The wailing rose in pitch. I stepped closer to peer over the counter, and there, on a blue mat in front of the television, in a plain flower-print dress, was a young woman, maybe twenty, her hands balled into fists pressed into her eyes, violently rocking back and forth, wailing and wailing. As she rocked, I caught glimpses of the back of her head, where her hair had worn away, leaving a large, pale patch of skin.

I stepped back to join the group, which was leaving to tour the facility. Talking with the guide, I learned that many of the residents had nearly drowned as young children. Looking around, I noticed there were no other visitors besides us. Was that common? I asked.

At first, the guide explained, a family will visit constantly, daily or even twice a day. Then maybe every other day. Then just weekends. After months or years, the visits taper off, until it's just, say, birthdays and Christmas. Eventually, most families move away, as far as they can get.

"I don't blame them," she said. "It's hard caring for these kids."

A fury churned in me. *Hard?* Of course it was hard, but how could parents abandon these kids? In one room, the patients lay on cots, mostly still, arranged in neat rows like soldiers in a barracks. I walked down a row until I made eye contact with one of them. She was in her late teens, with dark, tangled hair. I paused and tried smiling at her, showing her I cared. I picked up one of her hands; it was limp. But she gurgled and, looking right at me, smiled.

"I think she's smiling," I said to the attendant.

"Could be," she said. "It can be hard to tell sometimes."

But I was sure of it. She was smiling.

When we got back to campus, I was the last one left in the room with the professor. "So, what'd you think?" he asked.

I vented openly about how I couldn't believe that parents had abandoned these poor kids, and how one of them had even smiled at me.

The professor was a mentor, someone who thought deeply about how science and morality intersected. I expected him to agree with me.

"Yeah," he said. "Good. Good for you. But sometimes, you know, I think it's

better if they die."

I grabbed my bag and left.

She *had* been smiling, hadn't she?

Only later would I realize that our trip had added a new dimension to my understanding of the fact that brains give rise to our ability to form relationships and make life meaningful. Sometimes, they break.

As graduation loomed, I had a nagging sense that there was still far too much unresolved for me, that I wasn't done studying. I applied for a master's in English literature at Stanford and was accepted into the program. I had come to see language as an almost supernatural force, existing between people, bringing our brains, shielded in centimeter-thick skulls, into communion. A word meant something only between people, and life's meaning, its virtue, had something to do with the depth of the relationships we form. It was the relational aspect of humans—i.e., "human relationality"—that undergirded meaning. Yet somehow, this process existed in brains and bodies, subject to their own physiologic imperatives, prone to breaking and failing. There must be a way, I thought, that the language of life as experienced—of passion, of hunger, of love—bore some relationship, however convoluted, to the language of neurons, digestive tracts, and heartbeats.

At Stanford, I had the good fortune to study with Richard Rorty, perhaps the greatest living philosopher of his day, and under his tutelage I began to see all disciplines as creating a vocabulary, a set of tools for understanding human life in a particular way. Great literary works provided their own sets of tools, compelling the reader to use that vocabulary. For my thesis, I studied the work of Walt Whitman, a poet who, a century before, was possessed by the same questions that haunted me, who wanted to find a way to understand and describe what he termed "the Physiological-Spiritual Man."

As I finished my thesis, I could only conclude that Whitman had had no better luck than the rest of us at building a coherent "physiological-spiritual" vocabulary, but at least the ways in which he'd failed were illuminating. I was also increasingly certain that I had little desire to continue in literary studies, whose main preoccupations had begun to strike me as overly political and averse to science. One of my thesis advisers remarked that finding a community for myself in the literary world would be difficult, because most English PhDs reacted to science, as he put it, "like apes to fire, with sheer terror." I wasn't sure where my life was headed. My thesis—"Whitman and the Medicalization of Personality"—was well-received, but it was unorthodox, including as much history of psychiatry and neuroscience as literary criticism. It didn't quite fit in an English department. *I* didn't quite fit in an

English department.

Some of my closest friends from college were headed to New York City to pursue a life in the arts—some in comedy, others in journalism and television—and I briefly considered joining them and starting anew. But I couldn't quite let go of the question: Where did biology, morality, literature, and philosophy intersect? Walking home from a football game one afternoon, the autumn breeze blowing, I let my mind wander. Augustine's voice in the garden commanded, "Take up and read," but the voice I heard commanded the opposite: "Set aside the books and practice medicine." Suddenly, it all seemed obvious. Although—or perhaps because—my father, my uncle, and my elder brother were all doctors, medicine had never occurred to me as a serious possibility. But hadn't Whitman himself written that only the physician could truly understand "the Physiological-Spiritual Man"?

The next day, I consulted a premed adviser to figure out the logistics. Getting ready for medical school would take about a year of intense coursework, plus the application time, which added up to another eighteen months. It would mean letting my friends go to New York, to continue deepening those relationships, without me. It would mean setting aside literature. But it would allow me a chance to find answers that are not in books, to find a different sort of sublime, to forge relationships with the suffering, and to keep following the question of what makes human life meaningful, even in the face of death and decay.

I began working through the necessary premedical courses, loading up on chemistry and physics. Reluctant to take a part-time job—it would slow my studies—but unable to afford Palo Alto rent, I found an open window in an empty dormitory and climbed in. After a few weeks of squatting, I was discovered by the caretaker—who happened to be a friend. She provided a key to the room and some useful warnings, like when the high school girls' cheerleading camps would be coming through. Thinking it wise to avoid becoming a registered sex offender, I'd pack a tent, some books and granola, and head up to Tahoe until it was safe to return.

Because the med school application cycle takes eighteen months, I had a free year once my classes were over. Several professors had suggested I pursue a degree in the history and philosophy of science and medicine before deciding to leave academia for good. So I applied for, and was accepted into, the HPS program at Cambridge. I spent the next year in classrooms in the English countryside, where I found myself increasingly often arguing that direct experience of life-and-death questions was essential to generating substantial moral opinions about them. Words began to feel as weightless as the breath that carried them. Stepping back, I realized that I was merely confirming what I already knew: I wanted that direct experience. It was only in practicing medicine that I could pursue a serious biological philosophy. Moral speculation was puny compared to moral action. I finished my degree and

headed back to the States. I was going to Yale for medical school.

You would think that the first time you cut up a dead person, you'd feel a bit funny about it. Strangely, though, everything feels normal. The bright lights, stainless steel tables, and bow-tied professors lend an air of propriety. Even so, that first cut, running from the nape of the neck down to the small of the back, is unforgettable. The scalpel is so sharp it doesn't so much cut the skin as unzip it, revealing the hidden and forbidden sinew beneath, and despite your preparation, you are caught unawares, ashamed and excited. Cadaver dissection is a medical rite of passage and a trespass on the sacrosanct, engendering a legion of feelings: from revulsion, exhilaration, nausea, frustration, and awe to, as time passes, the mere tedium of academic exercise. Everything teeters between pathos and bathos: here you are, violating society's most fundamental taboos, and yet formaldehyde is a powerful appetite stimulant, so you also crave a burrito. Eventually, as you complete your assignments by dissecting the median nerve, sawing the pelvis in half, and slicing open the heart, the bathos supersedes: the sacred violation takes on the character of your average college class, replete with pedants, class clowns, and the rest. Cadaver dissection epitomizes, for many, the transformation of the somber, respectful student into the callous, arrogant doctor.

The enormity of the moral mission of medicine lent my early days of med school a severe gravity. The first day, before we got to the cadavers, was CPR training, my second time doing it. The first time, back in college, had been farcical, unserious, everyone laughing: the terribly acted videos and limbless plastic mannequins couldn't have been more artificial. But now the lurking possibility that we would have to employ these skills someday animated everything. As I repeatedly slammed my palm into the chest of a tiny plastic child, I couldn't help but hear, along with my fellow students' jokes, real ribs cracking.

Cadavers reverse the polarity. The mannequins you pretend are real; the cadavers you pretend are fake. But that first day, you just can't. When I faced my cadaver, slightly blue and bloated, his total deadness and total humanness were undeniable. The knowledge that in four months I would be bisecting this man's head with a hacksaw seemed unconscionable.

Yet there are anatomy professors. And the advice they gave us was to take one good look at our cadaver's face and then leave it covered; it makes the work easier. Just as we prepared, with deep breaths and earnest looks, to unwrap our cadaver's head, a surgeon stopped by to chat, leaning with his elbows on the corpse's face. Pointing out various marks and scars on the naked torso, he reconstructed the patient's history. This scar is from an inguinal hernia operation, this one a carotid