

Chimera

GERALD N. CALLAHAN

Last Thursday, one of those gray fall days when the starlings gather up and string between the elms around here, my children's mother—dead ten years—walked into a pastry shop where I was buttering a croissant. She ignored me, which she always does,

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ordered a plain bagel and an almond latte, picked up her food, and, without a glance at me, walked out. The starlings chattered, the day frowned, and I went back to buttering my croissant.

Just after her suicide, I saw this woman often—in towns where she never lived, walking her Airedales in the park, eating poached eggs at Joe's Cafe, sweeping grass clippings from her walk on Myrtle Street, stepping off the Sixteenth Street bus. We get together less often now. But when we do, like this morning, her image is as vivid as it ever was—her dark eyes as bright, her odd smile just as annoying.

I'm not crazy.

I know it isn't her, this woman I see. After all, she's dead, and I myself gave her ashes to my son. So it is another, a stranger, transformed by some old film still flickering through the projector inside my head. I know that. But every time I see her, it takes all that I have to stay in my chair or my car, to hold on to myself and not run after her calling out her name.

Some of this I understand. When something or someone is suddenly stripped from us, it seems only natural that our minds would try to compensate. Minds do that. If they didn't, we might be sucked into the vortex ourselves. That part, I grasp. I'd have thought, though, that in a year or two, the films in my mind would fade and break, and the tear in my life would scar and close like any other wound. And I expected, as the fissure closed, that my first wife would disappear.

I was wrong.

All the pieces of human bodies fit (more or less) into eleven systems—endocrine, musculoskeletal, cardiovascular, hematologic, pulmonary, urinary, reproductive, gastrointestinal, integumentary, nervous, and immune. So there are a limited number of

places where someone could hide something inside a human body. And so far as we know, only two of the body's systems, immune and nervous, store memories—fourth birthdays or former wives. That narrows it even further.

Most of us don't for a moment associate immune systems with hopes and fears, emotions and recollections, we don't imagine that anything other than lymph—the pale liquid gathered from the blood—is stored inside of thymuses, spleens, and lymph nodes. The business of immune systems is, after all, not hope, but immunity—protection against things like measles, mumps, whooping cough, typhus, cholera, plague, African green monkey virus, you name it.

But immune systems do remember things, intricate things that the rest of the body has forgotten. And the memories stored inside our immune systems can come back, like my first wife, at unexpected moments, with sometimes startling consequences.

My grandmother had a penchant for saving things. She had grown up in a very poor family and believed nothing should be wasted. On the plywood shelves of her closets, Mason jars that once held apple butter or pickled tomatoes were filled with buttons, snaps, paper clips and strips of cloth, seashells, rubber bands, pebbles, bobby pins, and cheap, shiny buckles—everything she'd ever come across that she thought might be useful someday.

Immune systems do that, too—believe that most everything they come across will be useful again someday. Grandmother used Mason jars, immune systems use lymph nodes. Immune systems collect bacteria, parasites and fungi, proteins, fats, sugars, and viruses—the stuff that falls through the cracks in our skin.

Human skin is like nothing else in this universe. It tastes of

sea salt and the iron inside of men and women. Its touch arouses us. Skin is cream, sand, teak, smoke, and stone. But mostly, skin is what keeps us apart from everything else on this planet, especially everything that might infect, infest, pollute, putrefy, and possess us. First and foremost, it is our skin that allows us to be here as individual men and women in a hungry world. Skin keeps things out—things that would eat us for lunch. And skin keeps things in—things we couldn't live without.

But skin can break down, get punctured by knives and needles or scraped off by tree limbs and tarmac. When that happens, we'd die without our immune systems—abruptly. Immune systems deal with the things that crawl through the holes in our skin. They label the intruders as dangerous, round them up, and destroy them. And immune systems never forget the things they've seen beneath our skin because they believe that one day those things will be back.

That's how we get to be adults—immunological memory. That's also how vaccines work. Until a few years ago, children in this country were regularly injected with cowpox, also known as vaccinia virus. Vaccinia virus is very similar to the virus that causes smallpox, with one important exception. Vaccinia virus doesn't cause the disfigurement, illness, and often death caused by smallpox. But as Edward Jenner discovered in the 1700s, people (in Jenner's case, milkmaids) who have been infected with cowpox don't get smallpox. A miracle. Immunity to cowpox protects a child from smallpox. That's because, even though their personalities are very different, smallpox virus and vaccinia virus have a lot of physical features in common. Immune systems that have learned to recognize and destroy cowpox virus also recognize and destroy the look-alike smallpox virus before it can do harm.

And immune systems remember. They remember each and every miracle, and remember them for a lifetime. A child vacci-

nated against smallpox virus will make a much more rapid and specific response on a second encounter with that virus than will an unvaccinated child. And the rapidity and specificity of that second response is what saves the vaccinated child's life.

Immunological memory is a simple memory of a tiny virus, but a memory powerful enough to have ended the devastating disease of smallpox on this planet. In essence it is no different from the memory that pulls our hand from the flame a little faster the second time, the memory that guides the cleaver beyond the scars on our knuckles or the memory of a first love lost.

The way immune systems do this is extraordinary. Lymph nodes are little filtering stations strung throughout the human body. Lymph nodes monitor the fluids of the body—mainly lymph and plasma—for infections. When something out of the ordinary is detected, it is usually the lymph nodes that remember and initiate an immune response.

Every time we are infected, a little of the bacteria or virus that infected us is saved in the lymph node where it first arrived. By the time we're adults, lymph nodes are filled with a bit of most everything we've ever been infected by; our lymph nodes are the repositories of our infectious histories. Just like my grandmother's jars but our immune systems sort this growing mass of memorabilia and remind themselves of what they've seen before, what they are likely to see again, and what they mustn't forget.

Mustn't forget, but mustn't hold too close to the surface, either. Because, just like some of the memories lurking in our brains, an inappropriate recollection can hurt or blind us, sometimes even kill us. Those things we suppress.

Some viruses and bacteria stored inside our bodies are intact and alive. The only thing keeping us from having the same diseases all over again is the constant vigilance of our immune systems. Through that vigilance, all of those things hanging around

inside us are kept in check, are suppressed to the point where they can help us remember, but cannot cause disease. Memory with a mission, selective recollection and suppression.

Lots of things can distract immune systems, though—drugs, malnutrition, stress, age, infection. When these things happen, immune systems can forget for a moment all those deadly things packed away inside of us. Then, like minds in panic, immune systems can become confused, forget which memory to recall, which memory to suppress, and the past can flare inside of us. When that happens, our very survival depends on our ability to regain our balance, to enhance some recollections and suppress others. A particularly pernicious example of this is shingles—a severe chicken pox-like rash that usually appears across the ribs beneath the arms, but may also grow in the eyes and lungs. It is most commonly a disease of the elderly.

People can't get shingles if they weren't infected with chicken pox, usually as children. Shingles and chicken pox are caused by the same virus—varicella zoster virus. When we get chicken pox, our immune systems and (interestingly) our nervous systems store a few leftover varicella zoster viruses for future reference. Later, when age or illness or depression distracts our immune systems, the virus begins to multiply again. Then the virus may blind us, may even kill us. This is shingles—a blazing memory of chicken pox, a childhood disease—a thing we wish we could forget.

So immune systems, like minds, are filled with memories—vivid, painful, sometimes fatal memories. The fragments of a life lived, bits and pieces of the past. And sometimes immune systems lose control of this smoldering wreckage and old flames flare anew.

Within me, then, is there a woman living in this ruin, a woman who walks and speaks exactly like my first wife? It is, of

course, impossible to answer that question. No one understands nearly enough about wives and immune systems. But it isn't, as it might seem, an entirely stupid question. Among the things we regularly trade with our wives (and the rest of our families for that matter) are viruses—colds, flus, cold sores, to mention only a few.

Enveloped viruses—like those that cause flu, cold sores, and AIDS—are so called because they carry with them an “envelope” of lipids and proteins taken from the host cell (the cell they grew up inside of). And many viruses also carry within them a little of the host cell's nucleic acids—DNA or RNA—the stuff of genes. Some of that DNA or RNA made from that RNA clearly gets incorporated into our chromosomes and begins to work inside of us. That means that each time we are infected with one of these viruses, we also acquire a little of the person who infected us, a little piece of someone else. Infection as communication. Infection as chimerization. Infection as memorization.

Perhaps that seems trivial—a bit of envelope here, a little DNA there. But over the course of an intimate relationship, we collect a lot of pieces of someone else. And a little of each of those pieces is stored in our lymph nodes and in our chromosomes.

Until. Until the person we've been communicating with is gone, and we stop gathering bits of someone we love. For a few days or weeks, everything seems pretty much like it was. Then one day, a day when, for no apparent reason, our defenses slip just a little, and a ghost walks through the door and orders an almond latte.

Nervous systems don't appear to store memories in the same way immune systems do. Most neurologists and neurochemists

believe that memory within the nervous system involves something called long-term potentiation or LTP—a means by which certain nerve pathways become preferred. Because of LTP a particular trigger—a picture of Aunt Helen—becomes likely to stimulate the same nerve circuit—the smell of cheap perfume—every time. But in general, how nervous systems store and recall memories isn't very well understood.

Human memory has been divided into two broad categories—declarative memory (explicit, consciously accessible memory: what was the name of the cereal I had for breakfast?) and emotional memory (often subconscious and inaccessible: why was I so frightened by that harmless snake I saw today?). But there is evidence for a third kind of memory as well, something I'll call phantom memory, memories that come from someplace beyond or beneath declarative and emotional circuits.

I'm pretty confident that declarative memory had nothing to do with my first wife walking in on me as I was buttering my croissant last Thursday. I'm less certain about emotional memory. And I am deeply intrigued by phantom memory.

People who have had arms and legs removed often experience phantom limbs—a sensation that the arm or leg is still there, sometimes a very painful sensation. This feeling is so real that people with phantom hands may try to pick up a coffee cup just as you or I would. People with phantom legs may try to stand before their declarative minds remind them they have no legs. The missing limbs seem completely real to these people and as much a part of themselves as any surviving appendage—even when the phantom limb is a foot felt to be dangling somewhere below the knee with no leg, real or phantom, between the ankle and a mid-thigh stump.

Some of those who have studied phantom-limb sensations argue that these are only recollections of sensations “remem-

bered" from the days before amputation. But children born without limbs—children who've never experienced the sensations of a normal limb—experience phantom limbs. Clearly, these phantoms are not simple recollections of better days. Instead, the presence of phantom limbs in these children suggests that some sort of prenatal image—some template of what a human should look like—is formed inside our fetal minds before our arms and legs develop, before even our nervous systems are fully formed. If at birth our bodies don't fit this template, our minds or brains attempt to remake reality, twist it until it fits what our minds say it ought to be.

No one knows where phantom memories reside. Often, phantom limbs are exceedingly painful, so physicians have tried to locate the source of the sensations and eliminate them. Spinal cords have been severed, nerve fibers cut, portions of the brain have been removed. Some of these sometimes caused the pain to disappear, but it usually returned within a few months or years. And none of these treatments routinely caused phantom limbs to disappear.

Occasionally over time phantom limbs will disappear on their own, though almost never permanently. The limbs usually return—in a month or a year or a decade. And when they do, they are just as real as the day they first appeared, or disappeared.

Phantom memories aren't always memories of limbs either. People who've lost their sight describe phantom visions: not recollections, but detailed images of sights they've never seen—buildings, burials, forests, flowers. Similarly, some people who've lost their hearing, Beethoven being one, are haunted by complex symphonies blaring in their ears.

No one knows how much of our reality comes to us from the physical world and how much "reality" we create inside our own minds. If we were to analyze, using something like a PET scanner

all the nervous activity occurring at any given moment inside a human body, no more than a fraction of a percent of this activity would be directly due to input from the senses. That is, only a tiny portion of what our nervous systems are occupied with, and by inference only a tiny portion of our thoughts, are direct results of what we see, hear, taste, smell, or touch. The rest of it, the remainder of our mental imaging, begins and ends inside of us. How that affects our "reality" isn't clear.

But it is clear that much of what originates within us is powerful enough to fill our mental hospitals with people who see and hear things that aren't there. Among the sights and sounds that originate within us are our images of ourselves and our realities—our archetypes. Such images are powerful icons, nearly immutable. These are the images of our dreams, our poetry, our theaters, our psychoses.

If physical reality, the outside world, changes abruptly, it may not be within our power to so abruptly change such deep-rooted images of ourselves and our worlds. When that happens, reality itself becomes implausible. Then our only way out is through a phantom, a bit of virtual reality that reconciles our world and the real world.

Are the dead, then, living within my neurons—inside my own pictures of me?

Images of ourselves—some apparently older than we are—are obviously deeply etched into the stones of our minds. Powerful things that resist change, particularly sudden change. But even these archetypal portraits of ourselves aren't without seams or cracks. And inside those seams and between those cracks, small forces working over years can introduce change. Time, in an intimate and powerful relationship, may reshape even our images of ourselves. The changes would be little ones at first, a tiny fissure unmortared here or there, room to include in our

self-portraits parts of other men or women, a first vision of ourselves as something more. Later, larger pieces of us might be lifted and replaced by whole chunks of another. Husband and wife begin to speak alike, know what the other is thinking, anticipate what the other will say, even begin to look alike. Until one day, what remains is truly and thoroughly a mosaic, a chimera—part man, part woman; part someone, part someone else.

And then, if that man or woman is amputated from us, clipped as quickly and as cleanly as a gangrenous leg, our minds are suddenly forced into a new reality—a reality without the other, a reality in which an essential piece of us is missing. At that point, our declarative minds would be at odds with our own pictures of ourselves. To rectify that, to reconcile the frames flickering inside with the darkness flaming outside, we conjure a phantom, a phantom to change our worlds. We force a bit of what is inside out there into the real world, to create someone or something that will help us slow the universe for a moment while we repaint our pictures of ourselves with a very small brush on a very large canvas.

There is a painting by Pierre Auguste Renoir which I first saw at the National Gallery in Washington, D.C. This painting, titled *Girl with a Watering Can*, is filled mostly with the off-whites and intense blues of the impressionist painter. But in the girl's hair, there is a blood-red bow. I've often wondered about that bow and why Renoir put it there. I've imagined the bow was a symbol of the death that begins at each of our births; I've imagined it as an omen of sexual maturity—its pain and its promise; I've even imagined it was nothing more than a schoolgirl's red bow.

But just now, I think the red bow is the other one inside of us, the red one who is probably at first mother—physically, immunologically, and psychologically. The one, too, who is later so many others—grandmother, friend, severed limb, or lost wife.

Renoir placed the bow in the girl's hair, near her brain. I don't imagine, though, that by that placement he intended for us to ignore all the other spots where bits of men and women gather in us.

Today, sitting on the redwood deck behind my house, the air smells of cinnamon and rainwater. For reasons I can't recall, those smells remind me of the Brandenburg Concertos, coffee on Sunday mornings, and the intricate paths of swallows.

Somewhere inside of me, there is a woman. But where she lives and who it was that led her into that pastry shop last Thursday, I've no way of knowing. For one part of me, that ignorance is a gnawing blindness. For another part of me, it is enough to simply know for certain that I will see her again.

GERALD N. CALLAHAN ON "Chimera"

When I was twelve years old, my brother Michael gave me his old Gilbert chemistry set as he left for school in Ohio. I loved the smell of acetic acid, the swirls of the Bohr atom, and the taste of potassium chloride. The moment I opened that old blue box, I was a chemist. Nothing would ever change that.

But when I wasn't blowing holes in the backyard or asphyxiating my sisters, I read everything I was allowed to, and then some. I read Edgar Rice Burroughs, Robert Heinlein, Robert Louis Stevenson, Isaac Asimov, Jules Verne, H. G. Wells, D. H. Lawrence, Jack London, and later Melville, Rilke, Dostoevsky, Dos Passos, Loren Eiseley, Huey Newton, and Pablo Neruda. I was enraptured by pictures painted with words and the worlds beneath them. Saturday mornings I filled with library books and pipe bombs.

It was a great time in my life. It ended too soon. And it would be thirty-five more years before I found my way back. For me, I came back to where I began with the essay "Chimera." This was the first essay in which the schizophrenic halves of my life once again fused. Science and literature on the same pages, and neither seemed too much the worse for the company.

The essay began, as many of my essays do, from a poem. The poem was not mine. It might have been Sharon Olds'. I really don't remember now. In the poem, the author steps onto a bus and meets a dead relative. I was struck by the image and how often we see the dead here and there. Especially if we have just lost someone we love. I wanted to write about that. So I did, and the first few paragraphs came quickly—my ex-wife, the coffee shop, the look on her face.

In the beginning, that was all I had in mind, no science, just a scene. But once that scene was on paper, I became intrigued with where we store memories, especially our memories of the dead. Most people, I think, assume everything is stashed inside our heads. But as an immunologist, I knew that wasn't true. So I wanted to explore that as well, to consider all the unexpected places memories might be buried. The rest just fell into place. I didn't expect that. I didn't expect the clear connection between our visions of the dead and phantom memories, or the parallels between immunological and neurological memories. But the more I researched, the more that was handed to me—immunity and memory, amputation and vision, and the smell, and the feel, and the look of the dead—all seemed to fall in my lap as the tale took on a life of its own.

Creative nonfiction, some people argue, is an oxymoron. Either, it has been said, it is creative or it is nonfiction. It cannot be both. I don't agree. But neither do I agree with those who define creative nonfiction in terms of some form of absolute truth or fact.

What we put in, what we leave out, the words we choose, the metaphors we build on, change everything. None of it is "real" in any absolute sense.

Clearly, the facts get muddled in creative nonfiction. That's how humans are. Conversations get constructed from ten-year-old memories, scents and scenes are rebuilt from imperfect neurons, tastes are retasted and touches are refelt. None of that is done with absolute accuracy.

That doesn't, in my opinion, detract from what we call creative nonfiction. Rather it adds. Creative nonfiction is about human experiences, real human experiences—the ways we recall things, the ways we revise things, the ways we relive things. And creative nonfiction fills a niche that will never be filled by either fiction or traditional nonfiction. An important niche about the things that happen to people in real time and the ways those things change us a day or decade later.

For me, that is the great allure of creative nonfiction—working with the world as we find it. Piecing together a moment when it seems the world offered a glimpse behind the curtains and we saw, for an instant, some sense in it all.

Writing is an unusual occupation. There are no rules, at least none that is written down anywhere or agreed upon by more than a handful of writers. There are many more paths to oblivion than to success, and no one can tell you with any certainty which is which. Beyond that, writing is a dangerous job. People have died from it.

All of my career, I've watched writers with much greater talent than mine simply disappear. I am still here, I think, more because of endurance than talent. I am still here pushing these keys because, to me, success and oblivion are nearly the same, as long as I have an hour or two, a keyboard, and an idea.