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Natural Causes

AN EPIDEMIC OF WELLNESS, THE CERTAINTY OF DYING, AND OUR ILLUSION OF CONTROL

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Introduction

As a teenager, I aspired to be a scientist, but too many things happened to distract me from that goal, so I became instead a science appreciator. I am not willing to spend my life in a laboratory or observatory, patiently recording measurements, but I am eager to read the reports of those who do, whether the subject is astronomy or biochemistry, and I generally consume those reports in pre-masticated forms, like *Discover* or *Scientific American*. Ten years ago, in the latter magazine, I found something so deeply upsetting that I could only think, *This changes everything.*

The article, written by one of *Scientific American*'s editors,[1] reported that the immune system actually abets the growth and spread of tumors, which is like saying that the fire department is indeed staffed by arsonists. We all know that the function of the immune system is to protect us, most commonly from bacteria and viruses, so its expected response to cancer should be a concerted and militant defense. As a graduate student, I had worked in two different laboratories dedicated to elucidating the defenses mounted by the immune system, and had come to think of it as a magical and for the most part invisible protective cloak. I could walk through the valley of the shadow of death, so to speak, or expose myself to deadly microbes, and know no evil, because my immune cells and antibodies would keep me from harm. But here they were—going over to the other side.

I half hoped that the accusations against the immune system would be refuted in a few years and end up in the

dustbin of "irreproducible results." But they persisted and are today openly acknowledged by the relevant specialists, though not without a certain queasiness, indicated by the frequent use of the word "paradoxical." This is not the kind of word that one expects to find in the scientific literature, which is what I had moved on to from the popular magazines. In science, if something appears to be a "paradox," then you have a lot more work to do until you solve it—or, of course, abandon some of your original assumptions and search for a new paradigm.

The paradox of the immune system and cancer is not just a scientific puzzle; it has deep moral reverberations. We know that the immune system is supposed to be "good," and in the popular health literature we are urged to take measures to strengthen it. Cancer patients in particular are exhorted to think "positive thoughts," on the unproven theory that the immune system is the channel of communication between one's conscious mind and one's evidently unconscious body. But if the immune system can actually enable the growth and spread of cancer, nothing may be worse for the patient than a stronger one. He or she would be better advised to suppress it, with, say, immunosuppressive drugs or perhaps "negative thoughts."

In the ideal world imagined by mid-twentieth-century biologists, the immune system constantly monitored the cells it encountered, pouncing on and destroying any aberrant ones. This monitoring work, called immunosurveillance, supposedly guaranteed that the body would be kept clear of intruders, or any kind of suspicious characters, cancer cells included. But as the century came to a close, it became increasingly evident that the immune system was not only giving cancer cells a pass and figuratively waving them through the checkpoints. Perversely and against all biological reason, it was aiding them to spread and establish new tumors throughout the body.

I took this personally. For one thing, I had been diagnosed with breast cancer in 2000, and this is one of the many types of cancer that has been found to be enabled by the immune system. Mine had only spread to a lymph node at the time of its discovery, but from there it was poised to strike out to, "God forbid"—as the doctors always piously put it—the liver or bones. My other personal connection had to do with the kind of immune cells that have turned out to do the enabling of cancer's spread; these are called macrophages, meaning "big eaters."

As it happens, I know more about macrophages than I do about any other human cell type, which is not to say I know very much. But for a variety of reasons, I had ended up doing my graduate research on macrophages, and not because of their involvement in cancer, which was completely unsuspected at the time. Macrophages are considered the "frontline defenders" in the body's unending struggle against microbial invaders. They are large, relative to many other body cells, they kill microbes by eating them, and they are usually ravenous. I cultured macrophages in glass flasks, studied them through a microscope, labeled particles within them with radioactive markers, and generally did all the things a grad student could do to understand these tiny life forms. I thought they were my friends.

In the meantime I had gone on to study and report on events at a far vaster scale—whole human bodies and, beyond them, societies. As an amateur sociologist, I had seen the health care system in my own country grow from a "cottage industry" to a three-trillion-dollar-a-year enterprise—employing millions, dominating neighborhoods and even skylines, setting off political fights over who should pay for it, and dooming politicians who choose the wrong answer. And what does this enterprise have to offer those who are not actually employed by it? Longevity is promised, among other things including freedom from disability, safe childbirth, and

healthy babies. In a word, it offers us control—not control over our government or social milieu, but over our own bodies.

The more ambitious among us seek to control the people around them, their employees, for example, and subordinates in general. But even the most unassuming and humble of us is expected to want to control what lies within the perimeter of our own skin. We avidly seek to control our weight and shape through diet and exercise and, if all else fails, surgical intervention. The entire penumbra of thoughts and emotions that originates in our physical bodies also demands attention and manipulation. We are told since childhood to control our emotions and are offered dozens of algorithms for doing so as we grow older, from meditation to psychotherapy. At older ages, we are urged to preserve our intellects by playing mentally challenging games like Lumosity and Sudoku. There is nothing about ourselves that is not potentially subject to our control.

So pervasive is the insistence on control that we may feel that we can legitimately seek homeopathic doses of its opposite—a fling with a stranger, a drunken night on the town, a riotous celebration of the home team. The wealthiest and most powerful of us can sample a brush with the out-of-control in the form of an "adventure vacation" located in an exotic setting and featuring hazardous activities, like mountain climbing or skydiving. When the vacation is over they can return to their regimens of self-mastery and control.

But no matter how much effort we expend, not everything is potentially within our control, not even our own bodies and minds. This to me is the first lesson of the macrophages that perversely promote lethal cancers. The body—or, to use more cutting-edge language, the "mindbody"—is not a smooth-running machine in which each part obediently performs its tasks for the benefit of the common good. It is at best a confederation of parts—cells, tissues, even thought patterns—

that may seek to advance their own agendas, whether or not they are destructive of the whole. What, after all, is cancer, other than a cellular rebellion against the entire organism? Even such seemingly benign conditions as pregnancy are turning out to be driven by competition and conflict on a very small scale.

I know that in an era where both conventional medicine and the woolliest "alternatives" hold out the goal of self-mastery, or at least the promise that we can prolong our lives and improve our health by carefully monitoring our lifestyles, many people will find this perspective disappointing, even defeatist. What is the point of minutely calibrating one's diet and time spent on the treadmill when you could be vanquished entirely by a few rogue cells within your own body?

But that is only the first lesson of the treasonous macrophages that inspired this book, and the story does not end there. It turns out that many cells within the body are capable of what biologists have come to call "cellular decision making." Certain cells can "decide" where to go and what to do next without any instructions from a central authority, almost as if they possessed "free will." A similar freedom, as we shall see, extends to many bits of matter that are normally considered nonliving, like viruses and even atoms.

Things I had been taught to believe are inert, passive, or merely insignificant—like individual cells—are in fact capable of making choices, including very bad ones. It's not going too far to say that the natural world, as we are coming to understand it, pulses with something like "life." And as I will conclude, this insight should inform the way we think, not only about our lives, but about death and how we die.

This book cannot be summarized in a sentence or two, but here is a rough road map to what follows: The first half is devoted to describing the quest for control as it is acted out through medical care, "lifestyle" adjustments in the areas of

exercise and diet, and a nebulous but ever-growing "wellness" industry that embraces both body and mind. All of these forms of intervention invite questions about the limits of human control, which leads us into the realm of biology—what lies within the body and whether its various parts and elements are even susceptible to conscious human control. Do they form a harmonious whole or are they engaged in perpetual conflict?

I present the emerging scientific case for a dystopian view of the body—not as a well-ordered machine, but as a site of ongoing conflict at the cellular level, which ends, at least in all the cases we know of, in death. Finally, at the end of this book, if not at the end of our individual lives, we are left with the inevitable question of "What am I?", or you, for that matter. What is the "self" if it is not rooted in a harmonious body, and what do we need it for anyway?

Here you will find no "how-to" advice, no tips about how to extend your life, upgrade your diet and exercise regimen, or fine-tune your attitude in a more healthful direction. If anything, I hope this book will encourage you to rethink the project of personal control over your body and mind. We would all like to live longer and healthier lives; the question is how much of our lives should be devoted to this project, when we all, or at least most of us, have other, often more consequential things to do. Soldiers seek physical fitness, but are prepared to die in battle. Health workers risk their own lives to save others in famines and epidemics. Good Samaritans throw their bodies between assailants and their intended victims.

You can think of death bitterly or with resignation, as a tragic interruption of your life, and take every possible measure to postpone it. Or, more realistically, you can think of life as an interruption of an eternity of personal nonexistence, and seize it as a brief opportunity to observe and interact with the living, ever-surprising world around us.

Chapter One

Midlife Revolt

In the last few years I have given up on the many medical measures—cancer screenings, annual exams, Pap smears, for example—expected of a responsible person with health insurance. This was not based on any suicidal impulse. It was barely even a decision, more like an accumulation of micro-decisions: to stay at my desk and meet a deadline or show up at the primary care office and submit to the latest test to gauge my biological sustainability; to spend the afternoon in the faux-cozy corporate environment of a medical facility or go for a walk. At first I criticized myself as a slacker and procrastinator, falling behind on the simple, obvious stuff that could prolong my life. After all, this is the great promise of modern scientific medicine: You do not have to get sick and die (at least not for a while), because problems can be detected "early" when they are readily treatable. Better to catch a tumor when it's the size of an olive than that of a cantaloupe.

I knew I was going against my own long-standing bias in favor of preventive medical care as opposed to expensive and invasive high-tech curative interventions. What could be more ridiculous than an inner-city hospital that offers a hyperbaric chamber but cannot bestir itself to get out in the

neighborhood and test for lead poisoning? From a public health perspective, as well as a personal one, it makes far more sense to screen for preventable problems than to invest huge resources in the treatment of the very ill.

I also understood that I was going against the grain for my particular demographic. Most of my educated, middle-class friends had begun to double down on their health-related efforts at the onset of middle age, if not earlier. They undertook exercise or yoga regimens; they filled their calendars with upcoming medical tests and exams; they boasted about their "good" and "bad" cholesterol counts, their heart rates and blood pressure. Mostly they understood the task of aging to be self-denial, especially in the realm of diet, where one medical fad, one study or another, condemned fat and meat, carbs, gluten, dairy, or all animal-derived products. In the health-conscious mind-set that has prevailed among the world's affluent people for about four decades now, health is indistinguishable from virtue, tasty foods are "sinfully delicious," while healthful foods may taste good enough to be advertised as "guilt-free." Those seeking to compensate for a lapse undertake punitive measures like fasts, purges, or diets composed of different juices carefully sequenced throughout the day.

I had a different reaction to aging: I gradually came to realize that I was *old enough to die*, by which I am not suggesting that each of us bears an expiration date. There is of course no fixed age at which a person ceases to be worthy of further medical investment, whether aimed at prevention or cure. The military judges that a person is old enough to die—to put him- or herself in the line of fire—at age eighteen. At the other end of life, many remain world leaders in their seventies or even older, without anyone questioning their need for lavish continuing testing and care. Zimbabwe's president, Robert Mugabe, who is ninety-two, and has undergone multiple treatments for prostate cancer. If we go

by newspaper obituaries, however, we notice that there is an age at which death no longer requires much explanation. Although there is no general editorial rule on these matters, it is usually sufficient when the deceased is in their seventies or older for the obituary writer to invoke "natural causes." It is sad when anyone dies, but no one can consider the death of a septuagenarian "tragic," and there will be no demand for an investigation.

Once I realized I was old enough to die, I decided that I was also old enough not to incur any more suffering, annoyance, or boredom in the pursuit of a longer life. I eat well, meaning I choose foods that taste good and that will stave off hunger for as long as possible, like protein, fiber, and fats. I exercise—not because it will make me live longer but because it feels good when I do. As for medical care: I will seek help for an urgent problem, but I am no longer interested in looking for problems that remain undetectable to me. Ideally, the determination of when one is old enough to die should be a personal decision, based on a judgment of the likely benefits, if any, of medical care and—just as important at a certain age—how we choose to spend the time that remains to us.

As it happens, I had always questioned whatever procedures the health care providers recommended; in fact, I am part of a generation of women who insisted on their right to raise questions without having the word "uncooperative," or worse, written into their medical records. So when a few years ago my primary care physician told me that I needed a bone density scan, I of course asked him why: What could be done if the result was positive and my bones were found to be hollowed out by age? Fortunately, he replied, there was now a drug for that. I told him I was aware of the drug, both from its full-page magazine ads as well as from articles in the media questioning its safety and efficacy. Think of the alternative, he said, which might well be, say, a hip fracture, followed by a rapid descent to the nursing home. So I grudgingly conceded

that undergoing the test, which is noninvasive and covered by my insurance, might be preferable to immobility and institutionalization.

The result was a diagnosis of "osteopenia," or thinning of the bones, a condition that might have been alarming if I hadn't found out that it is shared by nearly all women over the age of thirty-five. Osteopenia is, in other words, not a disease but a normal feature of aging. A little further research, all into readily available sources, revealed that routine bone scanning had been heavily promoted and even subsidized by the drug's manufacturer.[1] Worse, the favored medication at the time of my diagnosis has turned out to cause some of the very problems it was supposed to prevent—bone degeneration and fractures. A cynic might conclude that preventive medicine exists to transform people into raw material for a profit-hungry medical-industrial complex.

My first major defection from the required screening regimen was precipitated by a mammogram. No one likes mammography, which amounts to a brute-force effort to render the breasts transparent. First, a breast is flattened between two plates, then it is bombarded with ionizing radiation, which is, incidentally, the only environmental factor known for sure to cause breast cancer. I'd been fairly dutiful about mammograms since having been treated for breast cancer at the turn of the millennium, and now, about ten years later, the gynecologist's office reported that I'd had a "bad mammogram." I spent the next few anxious weeks undergoing further tests, in the midst of which I managed to earn a ticket for "distracted driving." Naturally I was distracted—by the looming decision of whether I would undergo debilitating cancer treatments again, or just let the disease take its course this time.

It turned out, after I'd been through a sonogram and fought panic in a coffinlike MRI tube, that the "bad mammogram" was a false positive resulting from the highly

sensitive new digital forms of imaging. That was my last mammogram. Lest this seem like a reckless decision, I was supported in it by a high-end big-city oncologist, who viewed all my medical images and said that there would be no need to see me again, which I interpreted as ever again.

After this, every medical or dental encounter seemed to end in a tussle. Dentists—and I have met a number of them in my moves around the country—always wanted a fresh set of X-rays, even if the only problem was a chip in the tip of a tooth. All I could think of was the X-ray machines every shoe store had offered in my youth, through which children were encouraged to peer at the bones of their feet while wiggling their toes. The fun ended in the 1970s, when these "fluoroscopes" were eventually banned as dangerous sources of radiation. So why should I routinely expose my mouth, which is much more cancer-prone than the feet, to high annual doses of roentgens? If there was some reason to suspect underlying structural problems, okay, but just to satisfy the dentist's curiosity or meet some abstract "standard of care"—no.

In all these encounters, I was struck by the professionals' dismissal of my subjective reports—usually along the lines of "I feel fine"—in favor of the occult findings of their equipment. One physician, unprompted by any obvious signs or symptoms, decided to measure my lung capacity with the new handheld instrument he'd acquired for this purpose. I breathed into it, as instructed, as hard as I could, but my breath did not register on his screen. He fiddled with the instrument, looking deeply perturbed, and told me I seemed to be suffering from a pulmonary obstruction. In my defense, I argued that I do at least thirty minutes of aerobic exercise a day, not counting ordinary walking, but I was too polite to demonstrate that I was still capable of vigorous oral argument.

It was my dentist, oddly enough, who suggested, during an

ordinary filling, that I be tested for sleep apnea. How a dentist got involved in what is normally the domain of ear, nose, and throat specialists, I do not know, but she recommended that the screening be done at a "sleep center," where I would attempt to sleep while heavily wired to monitoring devices, after which I could buy the treatment from her: a terrifying skull-shaped mask that would supposedly prevent sleep apnea and definitely extinguish any last possibility of sexual activity. But when I protested that there is no evidence I suffer from this disorder—no symptoms or detectable signs—the dentist said that I just might not be aware of it, adding that it could kill me in my sleep. This, I told her, is a prospect I can live with.

As soon as I reached the age of fifty physicians had begun to recommend—and in one case even plead—that I have a colonoscopy. As in the case of mammograms, the pressure to submit to a colonoscopy is hard to avoid. Celebrities promote them, comics snicker about them. During March, which is Colorectal Cancer Awareness Month, an eight-foot-high inflatable replica of a colon tours the country, allowing the anally curious to stroll through and inspect potentially cancerous polyps "from the inside."[2] But if mammography seems like a refined sort of sadism, colonoscopies mimic an actual sexual assault. First the patient is sedated—often with what is popularly known as the "date rape drug," Versed—then a long flexible tube, bearing a camera on one end, is inserted into the rectum and all the way up through the colon. What repelled me even more than this kinky procedure was the day of fasting and laxatives that was supposed to precede it, in order to ensure that the little camera encounters something other than feces. I put this off from year to year, until I finally felt safe in the knowledge that since colon cancer is usually slow-growing, any cancerous polyps I contain are unlikely to flourish until I am already close to death from other causes.

Then my internist, the chief physician in a midsized group practice, sent out a letter announcing that he was suspending his ordinary practice in order to offer a new level of "concierge care" for those willing to cough up an extra $1,500 a year beyond what they already pay for insurance. The elite care would include twenty-four-hour access to the doctor, leisurely visits, and, the letter promised, all kinds of tests and screenings in addition to the routine ones. This is when my decision crystallized: I made an appointment and told him face-to-face that, one, I was dismayed by his willingness to drop his less-than-affluent patients, who appeared to make up much of the waiting room population. And, two, I didn't want more tests; I wanted a doctor who could *protect* me from unnecessary procedures. I would remain with the masses of ordinary, haphazardly screened patients.

Of course all this unnecessary screening and testing happens because doctors order it, but there is a growing rebellion within the medical profession. Overdiagnosis is beginning to be recognized as a public health problem, and is sometimes referred to as an "epidemic." It is an appropriate subject for international medical conferences and evidence-laden books like *Overdiagnosed: Making People Sick in the Pursuit of Health* by H. Gilbert Welch and his Dartmouth colleagues Lisa Schwartz and Steve Woloshin. Even health columnist Jane Brody, long a cheerleader for standard preventive care, now recommends that we think twice before undergoing what were once routine screening procedures. Physician and blogger John M. Mandrola advises straightforwardly:

> Rather than being fearful of not detecting disease, both patients and doctors should fear healthcare. The best way to avoid medical errors is to avoid medical care. The default should be: I am well. The way to stay that way is to keep making good choices—not to have my doctor look for problems.[3]

With age, the cost/benefit analysis shifts. On the one hand, health care becomes more affordable—for Americans, anyway—at age sixty-five, when a person is eligible for Medicare. Exhortations to undergo screenings and tests continue, with loved ones joining the chorus. But in my case, the appetite for medical interactions of any kind wanes with each passing week. Suppose that preventive care uncovered some condition that would require agonizing treatments or sacrifices on my part—disfiguring surgery, radiation, drastic lifestyle limitations. Maybe these measures would add years to my life, but it would be a painful and depleted life that they prolonged. As it is now, preventive medicine often extends to the end of life: Seventy-five-year-olds are encouraged to undergo mammography; people already in the grip of one terminal disease may be subjected to screenings for others.[4] At a medical meeting, someone reported that a hundred-year-old woman had just had her first mammogram, causing the audience to break into a "loud cheer."[5]

One reason for the compulsive urge to test and screen and monitor is profit, and this is especially true in the United States, with its heavily private and often for-profit health system. How is a doctor—or hospital or drug company—to make money from essentially healthy patients? By subjecting them to tests and examinations that, in sufficient quantity, are bound to detect something wrong or at least worthy of follow-up. Gilbert and his coauthors offer a vivid analogy, borrowed from an expert in fractal geometry: "How many islands surround Britain's coasts?" The answer of course depends on the resolution of the map you are using, as well as how you are defining an "island." With high-resolution technologies like CT scans, the detection of tiny abnormalities is almost inevitable, leading to ever more tests, prescriptions, and doctor visits. And the tendency to overtest is amplified when the doctor who recommends the tests has a financial interest in the screening or imaging facility that he or she

refers people to.

It's not only a profit-hungry medical system that drives overtesting and overdiagnosis. Individual consumers, that is, former and potential patients, may demand the testing and even threaten a malpractice suit if they feel it is being withheld. In the last couple of decades, "patient advocacy" groups have sprung up to "brand" dozens of diseases and publicize the need for screening. Many have their own celebrity spokespersons—Katie Couric for colorectal cancer, Rudy Giuliani for prostate cancer—and each sports its own distinctive colored ribbon—pink for breast cancer, purple for testicular cancer, black for melanoma, a "puzzle pattern" for autism, and so on—as well as special days or months for concentrated publicity and lobbying efforts. The goal of all this is generally "awareness," meaning a willingness to undergo the appropriate screening, such as mammograms and PSA tests.

There are even sizable constituencies for discredited tests. When the U.S. Preventive Services Task Force decided to withdraw its recommendation of routine mammograms for women under fifty, even some feminist women's health organizations, which I had expected to be more critical of conventional medical practices, spoke out in protest. A small band of women, identifying themselves as survivors of breast cancer, demonstrated on a highway outside the task force's office, as if demanding that their breasts be squeezed. In 2008, the same task force gave PSA testing a grade of "D," but advocates like Giuliani, who insisted that the test had saved his life, continued to press for it, as do most physicians.[6] Many physicians justify tests of dubious value by the "peace of mind" they supposedly confer—except of course on those who receive false positive results.

Thyroid cancer is particularly vulnerable to overdiagnosis. With the introduction of more high-powered imaging techniques, doctors were able to detect many more tiny

lumps in people's necks and surgically remove them, whether surgery was warranted or not. An estimated 70 to 80 percent of thyroid cancer surgeries performed on US, French, and Italian women in the first decade of the twenty-first century are now judged to have been unnecessary. In South Korea, where doctors were especially conscientious about thyroid screening, the number rose to 90 percent. (Men were also overdiagnosed, but in far lower numbers.) Patients pay a price for these surgeries, including a lifelong dependence on thyroid hormones, and since these are not always fully effective, the patient may be left chronically "depressed and sluggish."[7]

So far I can detect no stirrings of popular revolt against the regime of unnecessary and often harmful medical screening. Hardly anyone admits to personally rejecting tests, and one who did—science writer John Horgan in a *Scientific American* blog on why he will not undergo a colonoscopy—somewhat undercut his well-reasoned argument by describing himself as an "anti-testing nut."[8] Most people joke about the distastefulness of the recommended procedures, while gamely submitting to whatever is expected of them.

But there's a significant rebellion brewing on another front. Increasingly, we read laments about the "medicalization of dying," usually focused on a formerly frisky parent or grandparent who had made clear her request for a natural, nonmedical death, only to end up tethered by cables and tubes to an ICU bed. Physicians see this all the time—witty people silenced by ventilators, the fastidious rendered incontinent—and some are determined not to let the same thing happen to themselves. They may refuse care, knowing that it is more likely to lead to disability than health, like the orthopedist who upon receiving a diagnosis of pancreatic cancer immediately closed down his practice and went home to die in relative comfort and peace.[9] A few physicians are more decisively proactive, and have themselves tattooed "NO

its emotional impact was instantaneous. I was infuriated. Not only had I read the standard mass market books on pregnancy, but I had recently received a PhD in cell biology and could have gone on and on in what would have seemed to the obstetric chief a similarly obscene fashion. This, I should observe, is the moment I became a feminist in the fullest sense—a conscious woman, that is, and something other than an object or moron. The nurse, to her eternal credit, remained silent and poker-faced.

In the following years, I never questioned the need for regularly scheduled prenatal care, postnatal care, well-baby and then well-child care. I was a good mother and showed up as required for all the vaccinations and measurements of my children's growth. There were hints along the way, though, that something was going on other than the provision of necessary care. When a pediatrician prescribed my second child an antibiotic for a cold, I asked whether she had a reason to believe his illness was bacterial. "No, it's viral, but I always prescribe an antibiotic for a nervous mother." The prescribing was, in other words, a performance for my benefit. Muttering that I was not the one who was going to be taking it, I picked up my baby and left.

If a medical procedure has no demonstrable effect on a person's physiology, then how should that procedure be classified? Clearly it is a ritual, which can be defined very generally as a "solemn ceremony consisting of a series of actions performed according to a prescribed order."[1] But rituals can also have intangible psychological effects, so the question becomes whether those effects in some way contribute to well-being, or serve to deepen the patient's sense of helplessness or, in my case, rage.

Western anthropologists found indigenous people worldwide performing supposedly health-giving rituals that had no basis in Western science, often involving drumming, dancing, chanting, the application of herbal concoctions, and

the manipulation of what appear to be sacred objects, such as animal teeth and colorful feathers. Anthropologist Edith Turner in the 1980s offered a lengthy and lovingly detailed account of the Ihamba ritual performed by the Ndembu of Zambia.[2] The afflicted person, whose symptoms include joint pains and extreme lassitude, is given a leaf infusion to drink, then her back is repeatedly anointed with other herbal mixtures, cut with a razor blade, and cupped with an animal horn—accompanied by drumming, singing, and a recital of grudges the patient holds against others in the village—until the source of the illness, the Ihamba, exits her body.

Does this ritual work? Yes, insofar as the afflicted person is usually restored to his or her usual strength and good humor. But there is no way to compare the efficacy of the Ihamba ritual to the measures a Western physician might use—the blood tests, the imaging, and so on—in part because the Ihamba itself is not something accessible to scientific medicine. It is conceived as the tooth of a human hunter, which has made its way into the victim's body, where it "bites" and may even reproduce. If this sounds fantastical, consider that, as an agent of disease, a "hunter's tooth" is a lot easier to visualize than a virus. Sometimes at the end of the ceremony one of the officiants will even produce a human tooth, claiming to have extracted it from the victim's body. And of course the opportunity to air long-held grudges may be therapeutic in itself.

Most of us would readily recognize the Ihamba ceremony as a "ritual"—a designation we would not be so quick to apply to a mammogram or a biopsy. The word carries a pejorative weight that is not associated with, for example, the phrase "health care." Early anthropologists could have called the healing practices of so-called primitive peoples "health care," but they took pains to distinguish the native activities from the purposeful interventions of Euro-American physicians. The latter were thought to be rational and scientific, while

the former were "mere" rituals, and the taint of imperialist arrogance has clung to the word ever since. As a British medical anthropologist points out:

> The old anthropological approach to ritual relied upon a distinction between two kinds of action: that, on the one hand, which was ends-directed and reasonable from the anthropologist's point of view—and which might be described as related to skill, technique or craft—and, on the other, action which was apparently irrational and, as far as the anthropologist was concerned, did not reveal any such links. Only the second kind of action was to be thought of as ritual.[3]

Inevitably, a parallel was drawn between the healing rituals of supposedly primitive peoples and the procedures of modern Western medicine. The latter also take place in specially designated spaces and are usually performed by costumed personnel, wearing white coats and sometimes masks, who also manipulate objects generally unavailable to the public at large. In 1956, a time of widespread reverence for the medical profession and its institutional settings, an American anthropologist published an article cunningly entitled "Body Rituals Among the Nacirema"—"American" spelled backward. Describing the hospital as the "temple" where Nacireman healing rituals are performed, the essay recounts that

> few supplicants [patients] in the temple are well enough to do anything but lie on their hard beds. The daily ceremonies, like the rites of the holy-mouth-men [dentists], involve discomfort and torture. With ritual precision, the vestals awaken their miserable charges each dawn and roll them about on their beds of pain while performing ablutions, in the formal movements of which

the maidens are highly trained. At other times they insert magic wands in the supplicant's mouth or force him to eat substances which are supposed to be healing. From time to time the medicine men come to their clients and jab magically treated needles into their flesh. The fact that these temple ceremonies may not cure, and may even kill the neophyte, in no way decreases the people's faith in the medicine men.[4]

The entire smorgasbord of procedures that make up the traditional "annual physical exam" can be seen as a ritual. Introduced in the 1920s and recommended by the American Medical Association about a decade later, the annual physical loomed as a high-stress hurdle in the life of any health-conscious medical consumer, a trial, so to speak, to determine innocence (health) or guilt (disease). The ingredients of the annual physical are not well defined, and they can take from fifteen minutes to—in the case of the wealthy and hypochondriacal—several days. Yet health insurers required them as a condition of coverage, members of the military were subjected to them, ordinary healthy people were reminded by postcard to show up for them. What follows in the doctor's office resembles a religious ritual, or even a spectacle designed for entertainment. Commenting on the occasional deployment of clowns to cheer up pediatric hospital patients, one canny observer noted the parallels between these newcomers to the medical scene, "primitive" shamans, and the usual physicians, right down to the "unusual costumes," and even masks, worn by all of them.[5] The patient undresses, the "healer" (or clown or shaman) utters incantations and performs various actions on the patient's body. Then, in the medical case, comes the "confession," in which the patient is grilled as to his or her personal transgressions: Do they smoke? Drink? Take illegal drugs? Have multiple sex partners? I made the mistake once

of admitting to some nonstandard drug use, years earlier, during college, but the feverish gleam that appeared in the doctor's eyes, along with a sudden burst of note-taking, convinced me never to mention it to a physician again.

The Emotional Impact of Ritual

To call something a "ritual" is not to say very much. Human rituals have ranged from human sacrifice to the innocent joys of maypole dancing, from forcible expulsion of a scapegoat from the community to the hearty embrace of a new leader or ally. But to say that a set of actions is a ritual does at least suggest that these actions serve social or cultural purposes other than the immediate task at hand, such as healing the sick or extracting an errant hunter's tooth. Twentieth-century anthropologists debated the "functions" of the rituals they found native people enacting—whether, for example, they served the individual participant or the group, the average person or, in hierarchical societies, the elite. Many rituals seemed designed to provide reassurance and guidance to individuals during various stages of the life cycle, such as puberty, which may be marked by painful scarification or by gentle celebrations like a bar mitzvah or a fifteen-year-old Latina girl's *quinceañera*. Other widespread rituals seemed designed to promote cohesion among individuals within a village or tribe—most obviously through group singing, dance, and feasting. Just as in traditional societies, modern urban people occupy a dense landscape of ritual—rituals of greeting and departure, holiday rituals, rituals associated with weddings, births, and deaths—most of which, most of the time, seem entirely benign. The psychological effect of these familiar rituals is usually to make the participants feel better about themselves and more securely bound to the community.

came with a medical rationale: The enema was to prevent contamination with feces; the pubic hair was shaved because it might be unclean; the episiotomy was meant to ease the baby's exit. But each of these was also painful, both physically and otherwise, and some came with their own risks. Shaving produces small cuts and abrasions that are open to infection; episiotomy scars heal more slowly than natural tears and can make it difficult for the woman to walk or relieve herself for weeks afterward. The lithotomy position may be more congenial for the physician than kneeling before a sitting woman, but it impedes the baby's progress through the birth canal and can lead to tailbone injuries in the mother.

So how are we to think of these procedures, which some doctors still insist on? If a procedure is not, strictly speaking, medically necessary to a healthy birth and may even be contraindicated, why is it being performed? Anthropologist Robbie E. Davis-Floyd proposed that these interventions be designated as *rituals*, in the sense that they are no more scientifically justified than the actions of a "primitive" healer. They do not serve any physiological purpose, only what she calls "ritual purposes." The enema and shaving underscore the notion that the woman is an unclean and even unwelcome presence in the childbirth process. Anesthesia and the lithotomy position send "the message that her body is a machine,"[8] or as Davis-Floyd quotes philosopher Carolyn Merchant, "a system of dead, inert particles," in which the conscious patient has no role to play. These are, in other words, rituals of domination, through which a woman at the very peak of her biological power and fecundity is made to feel powerless, demeaned, and dirty.

In one sense, childbirth rituals "worked." The women giving birth were often traumatized, reporting to Davis-Floyd that they "felt defeated"[9] or "thrown into depression": "You know, treating you like you're not very bright, like you don't know what's going on with your own body."[10] Yet, having