

# How to Know If You're Dead

## Beating-heart cadavers, live burial, and the scientific search for the soul

A patient on the way to surgery travels at twice the speed of a patient on the way to the morgue. Gurneys that ferry the living through hospital corridors move forward in an aura of purpose and push, flanked by caregivers with long strides and set faces, steadying IVs, pumping ambu bags, barreling into double doors. A gurney with a cadaver commands no urgency. It is wheeled by a single person, calmly and with little notice, like a shopping cart.

For this reason, I thought I would be able to tell when the dead woman was wheeled past. I have been standing around at the nurses' station on one of the surgery floors of the University of California at San Francisco Medical Center, watching gurneys go by and waiting for Von Peterson, public affairs manager of the California Transplant Donor Network, and a cadaver I will call H. "There's your patient," says the charge nurse. A commotion of turquoise legs passes with unexpected forward-leaning urgency.

H is unique in that she is both a dead person *and* a patient on the way to surgery. She is what's known as a "beating-heart cadaver," alive and well everywhere but her brain. Up until artificial respiration was developed, there was no such entity; without a functioning brain, a body will not breathe on its own. But hook it up to a respirator and its heart will beat, and the rest of its organs will, for a matter of days, continue to thrive.

H doesn't look or smell or feel dead. If you leaned in close over the gurney, you could see her pulse beating in the arteries of her neck. If you touched her arm, you would find it warm and resilient, like your own. This is perhaps why the nurses and doctors refer to H as a patient, and why she makes her entrance to the OR at the customary presurgery clip.

Since brain death is the legal definition of death in this country, H the person is certifiably dead. But H the organs and tissues is very much alive. These two seemingly contradictory facts afford her an opportunity most corpses do not have: that of extending the lives of two or three dying strangers. Over the next four hours, H will surrender her liver, kidneys, and heart. One at a time, surgeons will come and go, taking an organ and returning in haste to their stricken patients. Until recently, the process was known among transplant professionals as an "organ harvest," which had a joyous, celebratory ring to it, perhaps a little too joyous, as it has been of late replaced by the more businesslike "organ recovery."

In H's case, one surgeon will be traveling from Utah to recover her heart, and another, the one recovering both the liver and the kidneys, will be taking them two floors down. UCSF is a major transplant center, and organs removed here often remain in house. More typically, a transplant patient's surgeon will travel from UCSF to a small town somewhere to retrieve the organ—often from an accident victim, someone young with strong, healthy organs, whose brain took an unexpected hit. The doctor does this because typically there is no doctor in that small town with experience in organ recovery. Contrary to rumors about surgically trained thugs cutting people open in hotel rooms and stealing their kidneys, organ recovery is tricky work. If you want to be sure it's done right, you get on a plane and go do it yourself.

Today's abdominal recovery surgeon is named Andy Posselt. He is holding an electric cauterizing wand, which looks like a cheap bank pen on a cord but functions like a scalpel. The

wand both cuts and burns, so that as the incision is made, any vessels that are severed are simultaneously melted shut. The result is that there is a good deal less bleeding and a good deal more smoke and smell. It's not a bad smell, but simply a seared-meat sort of smell. I want to ask Dr. Posselt whether he likes it, but I can't bring myself to, so instead I ask whether he thinks it's bad that I like the smell, which I don't really, or maybe just a little. He replies that it is neither bad nor good, just morbid.

I have never before seen major surgery, only its scars. From the length of them, I had imagined surgeons doing their business, taking things out and putting them in, through an opening maybe eight or nine inches long, like a woman poking around for her glasses at the bottom of her purse. Dr. Posselt begins just above H's pubic hair and proceeds a good two feet north, to the base of her neck. He's unzipping her like a parka. Her sternum is sawed lengthwise so that her rib cage can be parted, and a large retractor is installed to pull the two sides of the incision apart so that it is now as wide as it is long. To see her this way, held open like a Gladstone bag, forces a view of the human torso for what it basically is: a large, sturdy container for guts.

On the inside, H looks very much alive. You can see the pulse of her heartbeat in her liver and all the way down her aorta. She bleeds where she is cut and her organs are plump and slippery-looking. The electronic beat of the heart monitor reinforces the impression that this is a living, breathing, thriving person. It is strange, almost impossible, really, to think of her as a corpse. When I tried to explain beating-heart cadavers to my stepdaughter Phoebe yesterday, it didn't make sense to her. But if their heart is beating, aren't they still a person? she wanted to know. In the end she decided they were "a kind of person you could play tricks on but they wouldn't know." Which, I think, is a pretty good way of summing up most donated cadavers. The things that happen to the dead in labs and ORs are like gossip passed behind one's back. They are not felt or known and so they cause no pain.

The contradictions and counterintuitions of the beating-heart cadaver can exact an emotional toll on the intensive care unit (ICU) staff, who must, in the days preceding the harvest, not only think of patients like H as living beings, but treat and care for them that way as well. The cadaver must be monitored around the clock and "life-saving" interventions undertaken on its behalf. Since the brain can no longer regulate blood pressure or the levels of hormones and their release into the bloodstream, these things must be done by ICU staff, in order to keep the organs from degrading. Observed a group of Case Western Reserve University School of Medicine physicians in a *New England Journal of Medicine* article entitled "Psychosocial and Ethical Implications of Organ Retrieval": "Intensive care unit personnel may feel confused about having to perform cardiopulmonary resuscitation on a patient who has been declared dead, whereas a 'do not resuscitate' order has been written for a living patient in the next bed."

The confusion people feel over beating-heart cadavers reflects centuries of confusion over how, exactly, to define death, to pinpoint the precise moment when the spirit—the soul, the chi, whatever you wish to call it— has ceased to exist and all that remains is a corpse. Before brain activity could be measured, the stopping of the heart had long been considered the defining moment. In point of fact, the brain survives for six to ten minutes after the heart has stopped pumping blood to it, but this is splitting hairs, and the definition works quite well for the most part. The problem, for centuries, was that doctors couldn't tell for sure whether the heart had ceased to beat or whether they were merely having trouble hearing it. The stethoscope wasn't invented until the mid-1800s, and the early models amounted to little more than a sort of medical ear trumpet. In cases where the heartbeat and pulse are especially faint—drownings, stroke, certain types of narcotic poisoning—even the most scrupulous physician had difficulty telling, and patients ran the risk of being dispatched to the undertaker before they'd actually expired.

To allay patients' considerable fears of live burial, as well as their own insecurities, eighteenth- and nineteenth-century physicians devised a diverting roster of methods for verifying death. Welsh physician and medical historian Jan Bondeson collected dozens of them for his witty and admirably researched book *Buried Alive*. The techniques seemed to fall into two categories: those that purported to rouse the unconscious patient with unspeakable pain, and those that threw in a measure of humiliation. The soles of the feet were sliced with razors, and needles jammed beneath toenails. Ears were assaulted with bugle fanfares and "hideous Shrieks and excessive Noises." One French clergyman recommended thrusting a red-hot poker up what Bondeson genteelly refers to as "the rear passage." A French physician invented a set of nipple pincers specifically for the purpose of reanimation. Another invented a bagpipelike contraption for administering tobacco enemas, which he demonstrated enthusiastically on cadavers in the morgues of Paris. The seventeenth-century anatomist Jacob Winslow entreated his colleagues to pour boiling Spanish wax on patients' foreheads and warm urine into their mouths. One Swedish tract on the matter suggested that a crawling insect be put into the corpse's ear. For simplicity and originality, though, nothing quite matches the thrusting of "a sharp pencil" up the presumed cadaver's nose.

In some cases, it is unclear who was the more humiliated, patient or doctor. French physician Jean Baptiste Vincent Laborde wrote at great length of his technique of rhythmic tongue-pulling, which was to be carried out for no less than three hours following the suspected death. (He later invented a hand-cranked tongue-pulling machine, which made the task less unpleasant though only marginally less tedious.) Another French physician instructed doctors to stick one of the patient's fingers in their ear, to listen for the buzzing sound produced by involuntary muscle movement.

Not all that surprisingly, none of these techniques gained wide acceptance, and most doctors felt that putrefaction was the only reliable way to verify that someone was dead. This meant that corpses had to sit around the house or the doctor's office for two or three days until the telltale signs and smells could be detected, a prospect perhaps even less appealing than giving them enemas. And so it was that special buildings, called waiting mortuaries, were built for the purpose of warehousing the moldering dead. These were huge, ornate halls, common in Germany in the 1800s. Some had separate halls for male and female cadavers, as though, even in death, men couldn't be trusted to comport themselves respectably in the presence of a lady. Others were segregated by class, with the well-to-do deceased paying extra to rot in luxury surroundings. Attendants were employed to keep watch for signs of life, which they did via a system of strings linking the fingers of corpses to a bell<sup>[1]</sup> or, in one case, the bellows of a large organ, so that any motion on the part of the deceased would alert the attendant, who was posted, owing to the considerable stench, in a separate room. As years passed and not a single resident was saved, the establishments began to close, and by 1940, the waiting mortuary had gone the way of the nipple pincer and the tongue puller.

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With improvements in stethoscopes and gains in medical knowledge, physicians began to trust themselves to be able to tell when a heart had stopped, and medical science came to agree that this was the best way to determine whether a patient had checked out for good or was merely down the hall getting ice. Placing the heart center stage in our definition of death served to give it, by proxy, a starring role in our definition of life and the soul, or spirit or self. It has long had this anyway, as evidenced by a hundred thousand love songs and sonnets and I ♥ bumper stickers. The concept of the beating-heart cadaver, grounded in a belief that the self resides in the brain and the brain alone, delivered a philosophical curveball. The notion of the heart as fuel pump took some getting used to.

The seat-of-the-soul debate has been ongoing some four thousand years. It started out not as a heart-versus-brain debate, but as heart-versus-liver. The ancient Egyptians were the original heart

guys. They believed that the ka resided in the heart. Ka was the essence of the person: spirit, intelligence, feelings and passions, humor, grudges, annoying television theme songs, all the things that make a person a person and not a nematode. The heart was the only organ left inside a mummified corpse, for a man needed his ka in the afterlife. The brain he clearly did not need: cadaver brains were scrambled and pulled out in globs, through the nostrils, by way of a hooked bronze needle. Then they were thrown away. (The liver, stomach, intestines, and lungs were taken out of the body, but kept: They were stored in earthen jars inside the tomb, on the assumption, I guess, that it is better to overpack than to leave something behind, particularly when packing for the afterlife.)

The Babylonians were the original liver guys, believing the organ to be the source of human emotion and spirit. The Mesopotamians played both sides of the argument, assigning emotion to the liver and intellect to the heart. These guys clearly marched to the beat of a freethinking drummer, for they assigned a further portion of the soul (cunning) to the stomach. Similar freethinkers throughout history have included Descartes, who wrote that the soul could be found in the walnut-sized pineal gland, and the Alexandrian anatomist Strato, who decided it lived "behind the eyebrows."

With the rise of classical Greece, the soul debate evolved into the more familiar heart-versus-brain, the liver having been demoted to an accessory role.[3] Though Pythagorus and Aristotle viewed the heart as the seat of the soul—the source of "vital force" necessary to live and grow—they believed there to be a secondary, "rational" soul, or mind, located in the brain. Plato agreed that both the heart and the brain were soul terrain, but assigned primacy to the brain. Hippocrates, for his part, seemed confused (or perhaps it's me). He noted the effects of a crushed brain upon speech and intelligence, yet referred to it as a mucus-secreting gland, and wrote elsewhere that intelligence and "heat," which he said controlled the soul, were located in the heart.

The early anatomists weren't able to shed much light on the issue, as the soul wasn't something you could see or set your scalpel to. Lacking any scientific means of pinning down the soul, the first anatomists settled on generative primacy: What shows up first in the embryo must be most important and therefore most likely to hold the soul. The trouble with this particular avenue of learning, known as ensoulment, was that early first-trimester human embryos were difficult to come by. Classical scholars of ensoulment, Aristotle among them, attempted to get around the problem by examining the larger, more easily obtained poultry embryo. To quote Vivian Nutton, author of "The Anatomy of the Soul in Early Renaissance Medicine" in *The Human Embryo*, "Analogies drawn from the inspection of hen's eggs foundered on the objection that man was not a chicken."

According to Nutton, the man who came closest to actually examining a human embryo was an anatomist named Realdo Colombo, who, at the behest of the Renaissance philosopher Girolamo Pontano,[4] dissected a one-month-old fetus. Colombo returned from his lab—which in all likelihood was not equipped with a microscope, as the device had barely been invented—bearing the fascinating if flat-out wrong news that the liver formed before the heart.

Living amid our culture's heart-centric rhetoric, the valentines and the pop song lyrics, it is hard to imagine assigning spiritual or emotional sovereignty to the liver. Part of the reason for its exalted status among the early anatomists was that they erroneously believed it to be the origin of all the body's blood vessels. (William Harvey's discovery of the circulatory system dealt the liver-as-seat-of-the-soul theory a final fatal blow; Harvey, you will not be surprised to hear, believed that the soul was carried in the blood.) I think it was something else too. The human liver is a boss-looking organ. It's glossy, aerodynamic, Olympian. It looks like sculpture, not guts. I've been marveling at H's liver, currently being prepped for its upcoming journey. The organs around it are amorphous and unappealing. Stomachs are flappy, indistinct; intestines, chaotic and soupy. Kidneys skulk under

bundles of fat. But the liver gleams. It looks engineered and carefully wrought. Its flanks have a subtle curve, like the horizon seen from space. If I were an ancient Babylonian, I guess I might think God splashed down here too.

Dr. Posselt is isolating the vessels and connectors on the liver and kidneys, prepping them for the organs' removal. The heart will go first— hearts remain viable only four to six hours; kidneys, by contrast, can be held in cold storage eighteen or even twenty-four hours—but the heart recovery surgeon hasn't arrived. He's flying in from Utah.

Minutes later a nurse puts her head through the OR doors. "Utah's in the building." People who work in ORs talk to each other in the truncated, slang-heavy manner of pilots and flight control types. The schedule on the OR wall lists today's procedure—the removal of four vital organs in preparation for death-defying transplantation into three desperate human beings—as "Recovery abdm (liv/kid x2) ♥." A few minutes ago, someone made reference to "the panky," meaning "the pancreas."

"Utah's changing."

Utah is a gentle-looking man of perhaps fifty, with graying hair and a thin, tanned face. He has finished changing and a nurse is snapping on his gloves. He looks calm, competent, even a little bored. (This just slays me. The man is about to cut a beating heart out of a human chest.) The heart has been hidden until now behind the pericardium, a thick protective sac which Dr. Posselt now cuts away.

There is her heart. I've never seen one beating. I had no idea they moved so much. You put your hand on your heart and you picture something pulsing slightly but basically still, like a hand on a desktop tapping Morse code. This thing is going wild in there. It's a mixing-machine part, a stoat squirming in its burrow, an alien life form that's just won a Pontiac on *The Price Is Right*. If you were looking for the home of the human body's animating spirit, I could imagine believing it to be here, for the simple reason that it is the human body's most animated organ.

Utah places clamps on the arteries of H's heart, stanching the flow of blood in preparation for the cuts. You can tell by the vital signs monitor that something monumental is happening to her body. The ECG has quit drawing barbed wire and begun to look like a toddler's Etch-a-Sketch scrawls. A quick geyser of blood splashes Utah's glasses, then subsides. If H weren't dead, she'd be dying now.

This is the moment, reported the Case Western Reserve group who interviewed transplant professionals, when OR staff have been known to report sensing a "presence" or "spirit" in the room. I try to raise the mental aerial and keep myself open to the vibes. Of course I have no idea how to do this. When I was six, I tried as hard as I could to will my brother's GI Joe to walk across the room to him. This is how these extrasensory deals go with me: Nothing comes of it, and then I feel stupid for trying.

Here is the deeply unnerving thing: The heart, cut from the chest, keeps beating on its own. Did Poe know this when he wrote "The Tell-Tale Heart"? So animated are these freestanding hearts that surgeons have been known to drop them. "We wash them off and they do just fine," replied New York heart transplant surgeon Mehmet Oz when I asked him about it. I imagined the heart slipping across the linoleum, the looks exchanged, the rush to retrieve it and clean it off, like a bratwurst that's rolled off the plate in a restaurant kitchen. I ask about these things, I think, because of a need to make human what otherwise verges on the godlike: taking live organs from bodies and making them live in another body. I also asked whether the surgeons ever set aside the old, damaged hearts of transplant recipients for them to keep. Surprisingly (to me, anyway), only a few express an interest in seeing or keeping their hearts.

Oz told me that a human heart removed from its blood supply can continue beating for as

long as a minute or two, until the cells begin to starve from lack of oxygen. It was phenomena like this that threw eighteenth-century medical philosophers into a tizzy: If the soul was in the brain and not the heart, as many believed at that time, how could the heart keep beating outside the body, cut off from the soul?

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The modern medical community is on the whole quite unequivocal about the brain being the seat of the soul, the chief commander of life and death. It is similarly unequivocal about the fact that people like H are, despite the hoochy-koochy going on behind their sternums, dead. We now know that the heart keeps beating on its own not because the soul is in there, but because it contains its own bioelectric power source, independent of the brain. As soon as H's heart is installed in someone else's chest and that person's blood begins to run through it, it will start beating anew—with no signals from the recipient's brain.

The legal community took a little longer than the physicians to come around to the concept of brain death. It was 1968 when the *Journal of the American Medical Association* published a paper by the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death advocating that irreversible coma be the new criterion for death, and clearing the ethical footpath for organ transplantation. It wasn't until 1974 that the law began to catch up. What forced the issue was a bizarre murder trial in Oakland, California.

The killer, Andrew Lyons, shot a man in the head in September 1973 and left him brain-dead. When Lyons's attorneys found out that the victim's family had donated his heart for transplantation, they tried to use this in Lyons's defense: If the heart was still beating at the time of surgery, they maintained, then how could it be that Lyons had killed him the day before? They tried to convince the jury that, technically speaking, Andrew Lyons hadn't murdered the man, the organ recovery surgeon had. According to Stanford University heart transplant pioneer Norman Shumway, who testified in the case, the judge would have none of it. He informed the jury that the accepted criteria for death were those set forth by the Harvard committee, and that that should inform their decision. (Photographs of the victim's brains "oozing from his skull," to quote the *San Francisco Chronicle*, probably didn't help Lyons's case.) In the end, Lyons was convicted of murder. Based on the outcome of the case, California passed legislation making brain death the legal definition of death. Other states quickly followed suit.

Andrew Lyons's defense attorney wasn't the first person to cry murder when a transplant surgeon removed a heart from a brain-dead patient. In the earliest days of heart transplants, Shumway, the first U.S. surgeon to carry out the procedure, was continually harangued by the coroner in Santa Clara County, where he practiced. The coroner didn't accept the brain-death concept of death and threatened that if Shumway went ahead with his plans to remove a beating heart from a brain-dead person and use it to save another person's life, he would initiate murder charges. Though the coroner had no legal ground to stand on and Shumway went ahead anyway, the press gave it a vigorous chew. New York heart transplant surgeon Mehmet Oz recalls the Brooklyn district attorney around that time making the same threat. "He said he'd indict and arrest any heart transplant surgeon who went into his borough and harvested an organ."

The worry, explained Oz, was that someday someone who wasn't actually brain-dead was going to have his heart cut out. There exist certain rare medical conditions that can look, to the untrained or negligent eye, a lot like brain death, and the legal types didn't trust the medical types to get it right. To a very, very small degree, they had reason to worry. Take, for example, the condition known as "locked-in state." In one form of the disease, the nerves, from eyeballs to toes, suddenly and rather swiftly drop out of commission, with the result that the body is completely

paralyzed, while the mind remains normal. The patient can hear what's being said but has no way of communicating that he's still in there, and that no, it's definitely not okay to give his organs away for transplant. In severe cases, even the muscles that contract to change the size of the pupils no longer function. This is bad news, for a common test of brain death is to shine a light in the patient's eyes to check for the reflexive contraction of the pupils. Typically, victims of locked-in state recover fully, provided no one has mistakenly wheeled them off to the OR to take out their heart.

Like the specter of live burial that plagued the French and German citizenry in the 1800s, the fear of live organ harvesting is almost completely without foundation. A simple EEG will prevent misdiagnosis of the locked-in state and conditions like it.

On a rational level, most people are comfortable with the concept of brain death and organ donation. But on an emotional level, they may have a harder time accepting it, particularly when they are being asked to accept it by a transplant counselor who would like them to okay the removal of a family member's beating heart. Fifty-four percent of families asked refuse consent. "They can't deal with the fear, however irrational, that the true end of their loved one will come when the heart is removed," says Oz. That they, in effect, will have killed him.

Even heart transplant surgeons sometimes have trouble accepting the notion that the heart is nothing more than a pump. When I asked Oz where he thought the soul resided, he said, "I'll confide in you that I don't think it's all in the brain. I have to believe that in many ways the core of our existence is in our heart." Does that mean he thinks the brain-dead patient isn't dead? "There's no question that the heart without a brain is of no value. But life and death is not a binary system." It's a continuum. It makes sense, for many reasons, to draw the legal line at brain death, but that doesn't mean it's really a line. "In between life and death is a state of near-death, or pseudo-life. And most people don't want what's in between."

If the heart of a brain-dead heart donor does contain something loftier than tissue and blood, some vestige of the spirit, then one could imagine that this vestige might travel along with the heart and set up housekeeping in the person who receives it. Oz once got a letter from a transplant patient who, shortly after receiving his new heart, began to experience what he could only imagine was some sort of contact with the consciousness of its previous owner. The patient, Michael "Med-O" Whitson, gave permission to quote the letter:

I write all this with respect for the possibility that rather than some kind of contact with the consciousness of my donor's heart, these are merely hallucinations from the medications or my own projections. I know this is a very slippery slope....

What came to me in the first contact...was the horror of dying. The utter suddenness, shock, and surprise of it all...The feeling of being ripped off and the dread of dying before your time....This and two other incidents are by far the most terrifying experiences I have ever had....

What came to me on the second occasion was my donor's experience of having his heart being cut out of his chest and transplanted. There was a profound sense of violation by a mysterious, omnipotent outside force....

...The third episode was quite different than the previous two. This time the consciousness of my donor's heart was in the present tense....He was struggling to figure out where he was, even what he was....It was as if none of your senses worked....An extremely frightening awareness of total dislocation....As if you are reaching with your hands to grasp something...but every time you reach forward your fingers end up only clutching thin air.

Of course, one man named Med-O does not a scientific inquiry make. A step in that direction is a study carried out in 1991 by a team of Viennese surgeons and psychiatrists. They

interviewed forty-seven heart transplant patients about whether they had noticed any changes in their personality that they thought were due to the influence of the new heart and its former owner. Forty-four of the forty-seven said no, although the authors, in the Viennese psychoanalytic tradition, took pains to point out that many of these people responded to the question with hostility or jokes, which, in Freudian theory, would indicate some level of denial about the issue.

The experiences of the three patients who answered yes were decidedly more prosaic than were Whitson's. The first was a forty-five-year-old man who had received the heart of a seventeen-year-old boy and told the researchers, "I love to put on earphones and play loud music, something I never did before. A different car, a good stereo—those are my dreams now." The other two were less specific. One said simply that the person who had owned his heart had been a calm person and that these feelings of calm had been "passed on" to him; another felt that he was living two people's lives, replying to questions with "we" instead of "I," but offered no details about the newly acquired personality or what sort of music he enjoyed.

For juicy details, we must turn to Paul Pearsall, the author of a book called *The Heart's Code* (and another called *Super Marital Sex* and one called *Superimmunity*). Pearsall interviewed 140 heart transplant patients and presented quotes from five of them as evidence for the heart's "cellular memory" and its influence on recipients of donated hearts. There was the woman who got the heart of a gay robber who was shot in the back, and suddenly began dressing in a more feminine manner and getting "shooting pains" in her back. There was another rendition of the middle-aged man with a teenage male heart who now feels compelled to "crank up the stereo and play loud rock-and-roll music"—which I had quickly come to see as the urban myth of heart transplantation. My out-and-out favorite was the woman who got a prostitute's heart and suddenly began renting X-rated videos, demanding sex with her husband every night, and performing strip teases for him. Of course, if the woman knew that her new heart had come from a prostitute, this might have caused the changes in her behavior. Pearsall doesn't mention whether the woman knew of her donor's occupation (or, for that matter, whether he'd sent her a copy of *Super Marital Sex* before the interview).

Pearsall is not a doctor, or not, at least, one of the medical variety. He is a doctor of the variety that gets a Ph.D. and attaches it to his name on selfhelp book covers. I found his testimonials iffy as evidence of any sort of "cellular" memory, based as they are on crude and sometimes absurd stereotypes: that women become prostitutes because they want to have sex all day long, that gay men—gay robbers, no less—like to dress in feminine clothing. But bear in mind that I am, to quote item 13 of Pearsall's Heart Energy Amplitude Test, "cynical and distrusting of others' motives."

Mehmet Oz, the transplant surgeon I spoke with, also got curious about the phenomenon of heart transplant patients' claiming to experience memories belonging to their donors. "There was this one fellow," he told me, "who said, 'I know who gave me this heart.' He gave me a detailed description of a young black woman who died in a car accident. 'I see myself in the mirror with blood on my face and I taste French fries in my mouth. I see that I'm black and I was in this accident.' It spooked me," says Oz, "and so I went back and checked. The donor was an elderly white male." Did he have other patients who-claimed to experience their donor's memories or to know something specific about their donor's life? He did. "They're all wrong."

After I spoke to Oz, I tracked down three more articles on the psychological consequences of having someone else's heart stitched into your chest. Fully half of all transplant patients, I found out, develop postoperative psychological problems of some sort. Rausch and Kneen described a man utterly terrified by the prospect of the transplant surgery, fearing that in giving up his heart he would lose his soul. Another paper presented the case of a patient who became convinced that he had been given a hen's heart. No mention was made of why he might have come to believe this or

whether he had been exposed to the writings of Robert Whytt, which actually might have provided some solace, pointing out, as they do, that a chicken heart can be made to beat on for several hours in the event of decapitation—always a plus.

The worry that one will take on traits of the heart donor is quite common, particularly when patients have received, or think that they have, a heart from a donor of a different gender or sexual orientation. According to a paper by James Tabler and Robert Frierson, recipients often wonder whether the donor "was promiscuous or oversexed, homosexual or bisexual, excessively masculine or feminine or afflicted with some sort of sexual dysfunction." They spoke to a man who fantasized that his donor had had a sexual "reputation" and said he had no choice but to live up to it. Rausch and Kneen describe a forty-two-year-old firefighter who worried that his new heart, which had belonged to a woman, would make him less masculine and that his firehouse buddies would no longer accept him. (A male heart, Oz says, is in fact slightly different from a female heart. A heart surgeon can tell one from the other by looking at the ECG, because the intervals are slightly different. When you put a female heart into a man, it will continue to beat like a female heart. And vice versa.)

From reading a paper by Kraft, it would seem that when men believe their new hearts came from another man, they often believe this man to have been a stud and that some measure of this studliness has somehow been imparted to them. Nurses on transplant wards often remark that male transplant patients show a renewed interest in sex. One reported that a patient asked her to wear "something other than that shapeless scrub so he could see her breasts." A post-op who had been impotent for seven years before the operation was found holding his penis and demonstrating an erection. Another nurse spoke of a man who left the fly of his pajamas unfastened to show her his penis. Conclude Tabler and Frierson, "This irrational but common belief that the recipient will somehow develop characteristics of the donor is generally transitory but may alter sexual patterns. . . ." Let us hope that the man with the chicken heart was blessed with a patient and open-minded spouse.

The harvesting of H is winding down. The last organs to be taken, the kidneys, are being brought up and separated from the depths of her open torso. Her thorax and abdomen are filled with crushed ice, turned red from blood. "Cherry Sno-Kone," I write in my notepad. It's been almost four hours now, and H has begun to look more like a conventional cadaver, her skin dried and dulled at the edges of the incision.

The kidneys are placed in a blue plastic bowl with ice and perfusion fluid. A relief surgeon arrives for the final step of the recovery, cutting off pieces of veins and arteries to be included, like spare sweater buttons, along with the organs, in case the ones attached to them are too short to work with. A half hour later, the relief surgeon steps aside and the resident comes over to sew H up.

As he talks to Dr. Posselt about the stitching, the resident strokes the bank of fat along H's incision with his gloved hand, then pats it twice, as though comforting her. When he turns back to his work, I ask him if it feels different to be working on a dead patient.

"Oh, yes," he answers. "I mean, I would never use this kind of stitch." He has begun stitching more widely spaced, comparatively crude loops, rather than the tight, hidden stitches used on the living.

I rephrase the question: Does it feel odd to perform surgery on someone who isn't alive?

His answer is surprising. "The patient *was* alive." I suppose surgeons are used to thinking about patients—particularly ones they've never met—as no more than what they see of them: open plots of organs. And as far as that goes, I guess you could say H *was* alive. Because of the cloths covering all but her opened torso, the young man never saw her face, didn't know if she was male

or female.

While the resident sews, a nurse picks stray danglies of skin and fat off the operating table with a pair of tongs and drops them inside the body cavity, as though H were a handy waste-basket. The nurse explains that this is done intentionally: "Anything not donated stays with her." The jigsaw puzzle put back in its box.

The incision is complete, and a nurse washes H off and covers her with a blanket for the trip to the morgue. Out of habit or respect, he chooses a fresh one. The transplant coordinator, Von, and the nurse lift H onto a gurney. Von wheels H into an elevator and down a hallway to the morgue. The workers are behind a set of swinging doors, in a back room. "Can we leave this here?" Von shouts. H has become a "this." We are instructed to wheel the gurney into the cooler, where it joins five others. H appears no different from the corpses already here.[8]

But H *is* different. She has made three sick people well. She has brought them extra time on earth. To be able, as a dead person, to make a gift of this magnitude is phenomenal. Most people don't manage this sort of thing while they're alive. Cadavers like H are the dead's heroes.

It is astounding to me, and achingly sad, that with eighty thousand people on the waiting list for donated hearts and livers and kidneys, with sixteen a day dying there on that list, that more than half of the people in the position H's family was in will say no, will choose to burn those organs or let them rot. We abide the surgeon's scalpel to save our own lives, our loved ones' lives, but not to save a stranger's life. H has no heart, but heartless is the last thing you'd call her.

#### Footnotes:

[1] I read on a Web site somewhere that this was the origin of the saying "Saved by the bell." In fact, by one reckoning, not a single corpse of the million-plus sent to waiting mortuaries over a twenty-year period awakened. If the bell alerted the attendant, which it often did, it was due to the corpse's shifting and collapsing as it decomposed. This was the origin of the saying "Driven to seek new employment by the bell," which you don't hear much anymore and probably never did, because I made it up.

[2] Since the odds of our meeting at a cocktail party are slim and the odds of my managing to swing the conversation around to speculums slimmer still, let me take this opportunity to share: The earliest speculum dates from Hippocrates' day and was a rectal model. It was to be another five hundred years before the vaginal speculum made its debut. Dr. Grigg theorizes that this was because, in the Arabian model of medicine followed at the time, women could be examined only by women, and there were very few women doctors to do the examining. This implies that most women in Hippocrates' day never went to the gyno. Given that the Hippocratic gynecological cabinet included cow-dung pessaries and fumigation materials "of heavy and foul smell"—not to mention rectal speculums—they were probably better off.

[3] We are fortunate that this is so, for we would otherwise have been faced with Celine Dion singing "My Liver Belongs to You" and movie houses playing *The Liver Is a Lonely Hunter*. Every Spanish love song that contains the word *corazon*, which is all of them, would contain the somewhat less lilted *higado*, and bumper stickers would proclaim, "I [liver symbol] my Pekingese."

[4] I'd never heard of him, either.

[5] No matter, for Whytt could have kept his appointment book full with no other patient besides

himself. According to R. K. French's biography of Whytt in the Wellcome Institute of the History of Medicine series, edited by F. N. L. Poynter, M.D., the physician suffered from gout, spastic bowels, "frequent flatulence," a "disordered stomach," "wind in the stomach," nightmares, giddiness, faintness, depression, diabetes, purple discolorations of the thighs and lower legs, coughing fits "producing a thick phlegm," and, according to two of Whytt's colleagues, hypochondria. When he died, at the age of fifty-two, he was found to have "some five pounds of fluid, mixed with a substance of gelatinous consistency and bluish color," in his chest, a "red spot the size of a shilling on the mucous membrane of the stomach," and concretions in the pancreas. (This is what happens when you put M.D.'s in charge of biographies.)

[6] What was going on in experiments like these? Hard to say. Perhaps the brain stem or spinal medulla had been left intact. Perhaps Dr. Redi, too, had his brain extracted from a hole in his skull the November past.

[7] People have trouble believing Thomas Edison to be a loopy individual. I offer as evidence the following passage on human memory, taken from his diaries: "We do not remember. A certain group of our little people do this for us. They live in that part of the brain which has become known as the 'fold of Broca.'... There may be twelve or fifteen shifts that change about and are on duty at different times like men in a factory.... Therefore it seems likely that remembering a thing is all a matter of getting in touch with the shift that was on duty when the recording was done."

[8] Unless H's family is planning a naked open-casket service, no one at her funeral will be able to tell she's had organs removed. Only with tissue harvesting, which often includes leg and arm bones, does the body take on a slightly altered profile, and in this case PVC piping or dowels are inserted to normalize the form and make life easier for mortuary staff and others who need to move the otherwise somewhat noodle-ized body.