

THE **BODY**
KEEPS
THE **SCORE**

BRAIN, MIND, AND BODY
IN THE HEALING OF TRAUMA

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To my patients, who kept the score and were the textbook.

CHAPTER 1

LESSONS FROM VIETNAM VETERANS

I became what I am today at the age of twelve, on a frigid overcast day in the winter of 1975. . . . That was a long time ago, but it's wrong what they say about the past. . . . Looking back now, I realize I have been peeking into that deserted alley for the last twenty-six years.

—Khaled Hosseini, *The Kite Runner*

Some people's lives seem to flow in a narrative; mine had many stops and starts. That's what trauma does. It interrupts the plot. . . . It just happens, and then life goes on. No one prepares you for it.

—Jessica Stern, *Denial: A Memoir of Terror*

The Tuesday after the Fourth of July weekend, 1978, was my first day as a staff psychiatrist at the Boston Veterans Administration Clinic. As I was hanging a reproduction of my favorite Breughel painting, "The Blind Leading the Blind," on the wall of my new office, I heard a commotion in the reception area down the hall. A moment later a large, disheveled man in a stained three-piece suit, carrying a copy of *Soldier of Fortune* magazine under his arm, burst through my door. He was so agitated and so clearly hungover that I wondered how I could possibly help this hulking man. I asked him to take a seat, and tell me what I could do for him.

His name was Tom. Ten years earlier he had been in the Marines, doing

his service in Vietnam. He had spent the holiday weekend holed up in his downtown-Boston law office, drinking and looking at old photographs, rather than with his family. He knew from previous years' experience that the noise, the fireworks, the heat, and the picnic in his sister's backyard against the backdrop of dense early-summer foliage, all of which reminded him of Vietnam, would drive him crazy. When he got upset he was afraid to be around his family because he behaved like a monster with his wife and two young boys. The noise of his kids made him so agitated that he would storm out of the house to keep himself from hurting them. Only drinking himself into oblivion or riding his Harley-Davidson at dangerously high speeds helped him to calm down.

Nighttime offered no relief—his sleep was constantly interrupted by nightmares about an ambush in a rice paddy back in Nam, in which all the members of his platoon were killed or wounded. He also had terrifying flashbacks in which he saw dead Vietnamese children. The nightmares were so horrible that he dreaded falling asleep and he often stayed up for most of the night, drinking. In the morning his wife would find him passed out on the living room couch, and she and the boys had to tiptoe around him while she made them breakfast before taking them to school.

Filling me in on his background, Tom said that he had graduated from high school in 1965, the valedictorian of his class. In line with his family tradition of military service he enlisted in the Marine Corps immediately after graduation. His father had served in World War II in General Patton's army, and Tom never questioned his father's expectations. Athletic, intelligent, and an obvious leader, Tom felt powerful and effective after finishing basic training, a member of a team that was prepared for just about anything. In Vietnam he quickly became a platoon leader, in charge of eight other Marines. Surviving slogging through the mud while being strafed by machine-gun fire can leave people feeling pretty good about themselves—and their comrades.

At the end of his tour of duty Tom was honorably discharged, and all he wanted was to put Vietnam behind him. Outwardly that's exactly what he did. He attended college on the GI Bill, graduated from law school, married his high school sweetheart, and had two sons. Tom was upset by how difficult it was to feel any real affection for his wife, even though her letters had kept him alive in the madness of the jungle. Tom went through the motions of living a normal life, hoping that by faking it he would learn to become his old self again. He now had a thriving law practice and a picture-perfect family, but he sensed he wasn't normal, he felt dead inside.

Although Tom was the first veteran I had ever encountered on a

professional basis, many aspects of his story were familiar to me. I grew up in postwar Holland, playing in bombed-out buildings, the son of a man who had been such an outspoken opponent of the Nazis that he had been sent to an internment camp. My father never talked about his war experiences, but he was given to outbursts of explosive rage that stunned me as a little boy. How could the man I heard quietly going down the stairs every morning to pray and read the Bible while the rest of the family slept have such a terrifying temper? How could someone whose life was devoted to the pursuit of social justice be so filled with anger? I witnessed the same puzzling behavior in my uncle, who had been captured by the Japanese in the Dutch East Indies (now Indonesia) and sent as a slave laborer to Burma, where he worked on the famous bridge over the river Kwai. He also rarely mentioned the war, and he, too, often erupted into uncontrollable rages.

As I listened to Tom, I wondered if my uncle and my father had had nightmares and flashbacks—if they, too, had felt disconnected from their loved ones and unable to find any real pleasure in their lives. Somewhere in the back of my mind there must also have been my memories of my frightened—and often frightening—mother, whose own childhood trauma was sometimes alluded to and, I now believe, was frequently reenacted. She had the unnerving habit of fainting when I asked her what her life was like as a little girl and then blaming me for making her so upset.

Reassured by my obvious interest, Tom settled down to tell me just how scared and confused he was. He was afraid that he was becoming just like his father, who was always angry and rarely talked with his children—except to compare them unfavorably with his comrades who had lost their lives around Christmas 1944, during the Battle of the Bulge.

As the session was drawing to a close, I did what doctors typically do: I focused on the one part of Tom's story that I thought I understood—his nightmares. As a medical student I had worked in a sleep laboratory, observing people's sleep/dream cycles, and had assisted in writing some articles about nightmares. I had also participated in some early research on the beneficial effects of the psychoactive drugs that were just coming into use in the 1970s. So, while I lacked a true grasp of the scope of Tom's problems, the nightmares were something I could relate to, and as an enthusiastic believer in better living through chemistry, I prescribed a drug that we had found to be effective in reducing the incidence and severity of nightmares. I scheduled Tom for a follow-up visit two weeks later.

When he returned for his appointment, I eagerly asked Tom how the medicines had worked. He told me he hadn't taken any of the pills. Trying to

conceal my irritation, I asked him why. "I realized that if I take the pills and the nightmares go away," he replied, "I will have abandoned my friends, and their deaths will have been in vain. I need to be a living memorial to my friends who died in Vietnam."

I was stunned: Tom's loyalty to the dead was keeping him from living his own life, just as his father's devotion to his friends had kept him from living. Both father's and son's experiences on the battlefield had rendered the rest of their lives irrelevant. How had that happened, and what could we do about it? That morning I realized I would probably spend the rest of my professional life trying to unravel the mysteries of trauma. How do horrific experiences cause people to become hopelessly stuck in the past? What happens in people's minds and brains that keeps them frozen, trapped in a place they desperately wish to escape? Why did this man's war not come to an end in February 1969, when his parents embraced him at Boston's Logan International Airport after his long flight back from Da Nang?

Tom's need to live out his life as a memorial to his comrades taught me that he was suffering from a condition much more complex than simply having bad memories or damaged brain chemistry—or altered fear circuits in the brain. Before the ambush in the rice paddy, Tom had been a devoted and loyal friend, someone who enjoyed life, with many interests and pleasures. In one terrifying moment, trauma had transformed everything.

During my time at the VA I got to know many men who responded similarly. Faced with even minor frustrations, our veterans often flew instantly into extreme rages. The public areas of the clinic were pockmarked with the impacts of their fists on the drywall, and security was kept constantly busy protecting claims agents and receptionists from enraged veterans. Of course, their behavior scared us, but I also was intrigued.

At home my wife and I were coping with similar problems in our toddlers, who regularly threw temper tantrums when told to eat their spinach or to put on warm socks. Why was it, then, that I was utterly unconcerned about my kids' immature behavior but deeply worried by what was going on with the vets (aside from their size, of course, which gave them the potential to inflict much more harm than my two-footers at home)? The reason was that I felt perfectly confident that, with proper care, my kids would gradually learn to deal with frustrations and disappointments, but I was skeptical that I would be able to help my veterans reacquire the skills of self-control and self-regulation that they had lost in the war.

Unfortunately, nothing in my psychiatric training had prepared me to deal with any of the challenges that Tom and his fellow veterans presented. I

went down to the medical library to look for books on war neurosis, shell shock, battle fatigue, or any other term or diagnosis I could think of that might shed light on my patients. To my surprise the library at the VA didn't have a single book about any of these conditions. Five years after the last American soldier left Vietnam, the issue of wartime trauma was still not on anybody's agenda. Finally, in the Countway Library at Harvard Medical School, I discovered *The Traumatic Neuroses of War*, which had been published in 1941 by a psychiatrist named Abram Kardiner. It described Kardiner's observations of World War I veterans and had been released in anticipation of the flood of shell-shocked soldiers expected to be casualties of World War II.

Kardiner reported the same phenomena I was seeing: After the war his patients were overtaken by a sense of futility; they became withdrawn and detached, even if they had functioned well before. What Kardiner called "traumatic neuroses," today we call posttraumatic stress disorder—PTSD. Kardiner noted that sufferers from traumatic neuroses develop a chronic vigilance for and sensitivity to threat. His summation especially caught my eye: "The nucleus of the neurosis is a physioneurosis."² In other words, post-traumatic stress isn't "all in one's head," as some people supposed, but has a physiological basis. Kardiner understood even then that the symptoms have their origin in the entire body's response to the original trauma.

Kardiner's description corroborated my own observations, which was reassuring, but it provided me with little guidance on how to help the veterans. The lack of literature on the topic was a handicap, but my great teacher, Evin Semrad, had taught us to be skeptical about textbooks. We had only one real textbook, he said: our patients. We should trust only what we could learn from them—and from our own experience. This sounds so simple, but even as Semrad pushed us to rely upon self-knowledge, he also warned us how difficult that process really is, since human beings are experts in wishful thinking and obscuring the truth. I remember him saying: "The greatest sources of our suffering are the lies we tell ourselves." Working at the VA I soon discovered how excruciating it can be to face reality. This was true both for my patients and for myself.

We don't really want to know what soldiers go through in combat. We do not really want to know how many children are being molested and abused in our own society or how many couples—almost a third, as it turns out—engage in violence at some point during their relationship. We want to think of families as safe havens in a heartless world and of our own country as populated by enlightened, civilized people. We prefer to believe that cruelty

occurs only in faraway places like Darfur or the Congo. It is hard enough for observers to bear witness to pain. Is it any wonder, then, that the traumatized individuals themselves cannot tolerate remembering it and that they often resort to using drugs, alcohol, or self-mutilation to block out their unbearable knowledge?

Tom and his fellow veterans became my first teachers in my quest to understand how lives are shattered by overwhelming experiences, and in figuring out how to enable them to feel fully alive again.

TRAUMA AND THE LOSS OF SELF

The first study I did at the VA started with systematically asking veterans what had happened to them in Vietnam. I wanted to know what had pushed them over the brink, and why some had broken down as a result of that experience while others had been able to go on with their lives.³ Most of the men I interviewed had gone to war feeling well prepared, drawn close by the rigors of basic training and the shared danger. They exchanged pictures of their families and girlfriends; they put up with one another's flaws. And they were prepared to risk their lives for their friends. Most of them confided their dark secrets to a buddy, and some went so far as to share each other's shirts and socks.

Many of the men had friendships similar to Tom's with Alex. Tom met Alex, an Italian guy from Malden, Massachusetts, on his first day in country, and they instantly became close friends. They drove their jeep together, listened to the same music, and read each other's letters from home. They got drunk together and chased the same Vietnamese bar girls.

After about three months in country Tom led his squad on a foot patrol through a rice paddy just before sunset. Suddenly a hail of gunfire spurted from the green wall of the surrounding jungle, hitting the men around him one by one. Tom told me how he had looked on in helpless horror as all the members of his platoon were killed or wounded in a matter of seconds. He would never get one image out of his mind: the back of Alex's head as he lay facedown in the rice paddy, his feet in the air. Tom wept as he recalled, "He was the only real friend I ever had." Afterward, at night, Tom continued to hear the screams of his men and to see their bodies falling into the water. Any sounds, smells, or images that reminded him of the ambush (like the popping of firecrackers on the Fourth of July) made him feel just as paralyzed, terrified, and enraged as he had the day the helicopter evacuated him from the rice paddy.

Maybe even worse for Tom than the recurrent flashbacks of the ambush was the memory of what happened afterward. I could easily imagine how Tom's rage about his friend's death had led to the calamity that followed. It took him months of dealing with his paralyzing shame before he could tell me about it. Since time immemorial veterans, like Achilles in Homer's *Iliad*, have responded to the death of their comrades with unspeakable acts of revenge. The day after the ambush Tom went into a frenzy to a neighboring village, killing children, shooting an innocent farmer, and raping a Vietnamese woman. After that it became truly impossible for him to go home again in any meaningful way. How can you face your sweetheart and tell her that you brutally raped a woman just like her, or watch your son take his first step when you are reminded of the child you murdered? Tom experienced the death of Alex as if part of himself had been forever destroyed—the part that was good and honorable and trustworthy. Trauma, whether it is the result of something done to you or something you yourself have done, almost always makes it difficult to engage in intimate relationships. After you have experienced something so unspeakable, how do you learn to trust yourself or anyone else again? Or, conversely, how can you surrender to an intimate relationship after you have been brutally violated?

Tom kept showing up faithfully for his appointments, as I had become for him a lifeline—the father he'd never had, an Alex who had survived the ambush. It takes enormous trust and courage to allow yourself to remember. One of the hardest things for traumatized people is to confront their shame about the way they behaved during a traumatic episode, whether it is objectively warranted (as in the commission of atrocities) or not (as in the case of a child who tries to placate her abuser). One of the first people to write about this phenomenon was Sarah Haley, who occupied an office next to mine at the VA Clinic. In an article entitled "When the Patient Reports Atrocities,"⁴ which became a major impetus for the ultimate creation of the PTSD diagnosis, she discussed the well-nigh intolerable difficulty of talking about (and listening to) the horrendous acts that are often committed by soldiers in the course of their war experiences. It's hard enough to face the suffering that has been inflicted by others, but deep down many traumatized people are even more haunted by the shame they feel about what they themselves did or did not do under the circumstances. They despise themselves for how terrified, dependent, excited, or enraged they felt.

In later years I encountered a similar phenomenon in victims of child abuse: Most of them suffer from agonizing shame about the actions they took to survive and maintain a connection with the person who abused them.

This was particularly true if the abuser was someone close to the child, someone the child depended on, as is so often the case. The result can be confusion about whether one was a victim or a willing participant, which in turn leads to bewilderment about the difference between love and terror; pain and pleasure. We will return to this dilemma throughout this book.

NUMBING

Maybe the worst of Tom's symptoms was that he felt emotionally numb. He desperately wanted to love his family, but he just couldn't evoke any deep feelings for them. He felt emotionally distant from everybody, as though his heart were frozen and he were living behind a glass wall. That numbness extended to himself, as well. He could not really feel anything except for his momentary rages and his shame. He described how he hardly recognized himself when he looked in the mirror to shave. When he heard himself arguing a case in court, he would observe himself from a distance and wonder how this guy, who happened to look and talk like him, was able to make such cogent arguments. When he won a case he pretended to be gratified, and when he lost it was as though he had seen it coming and was resigned to the defeat even before it happened. Despite the fact that he was a very effective lawyer, he always felt as though he were floating in space, lacking any sense of purpose or direction.

The only thing that occasionally relieved this feeling of aimlessness was intense involvement in a particular case. During the course of our treatment Tom had to defend a mobster on a murder charge. For the duration of that trial he was totally absorbed in devising a strategy for winning the case, and there were many occasions on which he stayed up all night to immerse himself in something that actually excited him. It was like being in combat, he said—he felt fully alive, and nothing else mattered. The moment Tom won that case, however, he lost his energy and sense of purpose. The nightmares returned, as did his rage attacks—so intensely that he had to move into a motel to ensure that he would not harm his wife or children. But being alone, too, was terrifying, because the demons of the war returned in full force. Tom tried to stay busy, working, drinking, and drugging—doing anything to avoid confronting his demons.

He kept thumbing through *Soldier of Fortune*, fantasizing about enlisting as a mercenary in one of the many regional wars then raging in Africa. That spring he took out his Harley and roared up the Kancamagus Highway in New Hampshire. The vibrations, speed, and danger of that ride helped

him pull himself back together, to the point that he was able to leave his motel room and return to his family.

THE REORGANIZATION OF PERCEPTION

Another study I conducted at the VA started out as research about nightmares but ended up exploring how trauma changes people's perceptions and imagination. Bill, a former medic who had seen heavy action in Vietnam a decade earlier, was the first person enrolled in my nightmare study. After his discharge he had enrolled in a theological seminary and had been assigned to his first parish in a Congregational church in a Boston suburb. He was doing fine until he and his wife had their first child. Soon after the baby's birth, his wife, a nurse, had gone back to work while he remained at home, working on his weekly sermon and other parish duties and taking care of their newborn. On the very first day he was left alone with the baby, it began to cry, and he found himself suddenly flooded with unbearable images of dying children in Vietnam.

Bill had to call his wife to take over child care and came to the VA in a panic. He described how he kept hearing the sounds of babies crying and seeing images of burned and bloody children's faces. My medical colleagues thought that he must surely be psychotic, because the textbooks of the time said that auditory and visual hallucinations were symptoms of paranoid schizophrenia. The same texts that provided this diagnosis also supplied a cause: Bill's psychosis was probably triggered by his feeling displaced in his wife's affections by their new baby.

As I arrived at the intake office that day, I saw Bill surrounded by worried doctors who were preparing to inject him with a powerful antipsychotic drug and ship him off to a locked ward. They described his symptoms and asked my opinion. Having worked in a previous job on a ward specializing in the treatment of schizophrenics, I was intrigued. Something about the diagnosis didn't sound right. I asked Bill if I could talk with him, and after hearing his story, I unwittingly paraphrased something Sigmund Freud had said about trauma in 1895: "I think this man is suffering from memories." I told Bill that I would try to help him and, after offering him some medications to control his panic, asked if he would be willing to come back a few days later to participate in my nightmare study.⁵ He agreed.

As part of that study we gave our participants a Rorschach test.⁶ Unlike tests that require answers to straightforward questions, responses to the Rorschach are almost impossible to fake. The Rorschach provides us with a

unique way to observe how people construct a mental image from what is basically a meaningless stimulus: a blot of ink. Because humans are meaning-making creatures, we have a tendency to create some sort of image or story out of those inkblots, just as we do when we lie in a meadow on a beautiful summer day and see images in the clouds floating high above. What people make out of these blots can tell us a lot about how their minds work.

On seeing the second card of the Rorschach test, Bill exclaimed in horror, "This is that child that I saw being blown up in Vietnam. In the middle, you see the charred flesh, the wounds, and the blood is spurting out all over." Panting and with sweat beading on his forehead, he was in a panic similar to the one that had initially brought him to the VA clinic. Although I had heard veterans describing their flashbacks, this was the first time I actually witnessed one. In that very moment in my office, Bill was obviously seeing the same images, smelling the same smells, and feeling the same physical sensations he had felt during the original event. Ten years after helplessly holding a dying baby in his arms, Bill was reliving the trauma in response to an inkblot. Experiencing Bill's flashback firsthand in my office helped me realize the agony that regularly visited the veterans I was trying to treat and helped me appreciate again how critical it was to find a solution. The traumatic event itself, however horrendous, had a beginning, a middle, and an end, but I now saw that flashbacks could be even worse. You never know when you will be assaulted by them again and you have no way of telling when they will stop. It took me years to learn how to effectively treat flashbacks, and in this process Bill turned out to be one of my most important mentors.

When we gave the Rorschach test to twenty-one additional veterans, the response was consistent: Sixteen of them, on seeing the second card, reacted as if they were experiencing a wartime trauma. The second Rorschach card is the first card that contains color and often elicits so-called color shock in response. The veterans interpreted this card with descriptions like "These are the bowels of my friend Jim after a mortar shell ripped him open" and "This is the neck of my friend Danny after his head was blown off by a shell while we were eating lunch." None of them mentioned dancing monks, fluttering butterflies, men on motorcycles, or any of the other ordinary, sometimes whimsical images that most people see.

While the majority of the veterans were greatly upset by what they saw, the reactions of the remaining five were even more alarming: They simply went blank. "This is nothing," one observed, "just a bunch of ink." They were right, of course, but the normal human response to ambiguous stimuli is to use our imagination to read something into them.

We learned from these Rorschach tests that traumatized people have a tendency to superimpose their trauma on everything around them and have trouble deciphering whatever is going on around them. There appeared to be little in between. We also learned that trauma affects the imagination. The five men who saw nothing in the blots had lost the capacity to let their minds play. But so, too, had the other sixteen men, for in viewing scenes from the past in those blots they were not displaying the mental flexibility that is the hallmark of imagination. They simply kept replaying an old reel.

Imagination is absolutely critical to the quality of our lives. Our imagination enables us to leave our routine everyday existence by fantasizing about travel, food, sex, falling in love, or having the last word—all the things that make life interesting. Imagination gives us the opportunity to envision new possibilities—it is an essential launchpad for making our hopes come true. It fires our creativity, relieves our boredom, alleviates our pain, enhances our pleasure, and enriches our most intimate relationships. When people are compulsively and constantly pulled back into the past, to the last time they felt intense involvement and deep emotions, they suffer from a failure of imagination, a loss of the mental flexibility. Without imagination there is no hope, no chance to envision a better future, no place to go, no goal to reach.

The Rorschach tests also taught us that traumatized people look at the world in a fundamentally different way from other people. For most of us a man coming down the street is just someone taking a walk. A rape victim, however, may see a person who is about to molest her and go into a panic. A stern schoolteacher may be an intimidating presence to an average kid, but for a child whose stepfather beats him up, she may represent a torturer and precipitate a rage attack or a terrified cowering in the corner.

STUCK IN TRAUMA

Our clinic was inundated with veterans seeking psychiatric help. However, because of an acute shortage of qualified doctors, all we could do was put most of them on a waiting list, even as they continued brutalizing themselves and their families. We began seeing a sharp increase in arrests of veterans for violent offenses and drunken brawls—as well as an alarming number of suicides. I received permission to start a group for young Vietnam veterans to serve as a sort of holding tank until "real" therapy could start.

At the opening session for a group of former Marines, the first man to

speaking flatly declared, "I do not want to talk about the war." I replied that the members could discuss anything they wanted. After half an hour of excruciating silence, one veteran finally started to talk about his helicopter crash. To my amazement the rest immediately came to life, speaking with great intensity about their traumatic experiences. All of them returned the following week and the week after. In the group they found resonance and meaning in what had previously been only sensations of terror and emptiness. They felt a renewed sense of the comradeship that had been so vital to their war experience. They insisted that I had to be part of their newfound unit and gave me a Marine captain's uniform for my birthday. In retrospect that gesture revealed part of the problem: You were either in or out—you either belonged to the unit or you were nobody. After trauma the world becomes sharply divided between those who know and those who don't. People who have not shared the traumatic experience cannot be trusted, because they can't understand it. Sadly, this often includes spouses, children, and co-workers.

Later I led another group, this time for veterans of Patton's army—men now well into their seventies, all old enough to be my father. We met on Monday mornings at eight o'clock. In Boston winter snowstorms occasionally paralyze the public transit system, but to my amazement all of them showed up even during blizzards, some of them trudging several miles through the snow to reach the VA Clinic. For Christmas they gave me a 1940s GI-issue wristwatch. As had been the case with my group of Marines, I could not be their doctor unless they made me one of them.

Moving as these experiences were, the limits of group therapy became clear when I urged the men to talk about the issues they confronted in their daily lives: their relationships with their wives, children, girlfriends, and family; dealing with their bosses and finding satisfaction in their work; their heavy use of alcohol. Their typical response was to balk and resist and instead recount yet again how they had plunged a dagger through the heart of a German soldier in the Hürtgen Forest or how their helicopter had been shot down in the jungles of Vietnam.

Whether the trauma had occurred ten years in the past or more than forty, my patients could not bridge the gap between their wartime experiences and their current lives. Somehow the very event that caused them so much pain had also become their sole source of meaning. They felt fully alive only when they were revisiting their traumatic past.

DIAGNOSING POSTTRAUMATIC STRESS

In those early days at the VA, we labeled our veterans with all sorts of diagnoses—alcoholism, substance abuse, depression, mood disorder, even schizophrenia—and we tried every treatment in our textbooks. But for all our efforts it became clear that we were actually accomplishing very little. The powerful drugs we prescribed often left the men in such a fog that they could barely function. When we encouraged them to talk about the precise details of a traumatic event, we often inadvertently triggered a full-blown flashback, rather than helping them resolve the issue. Many of them dropped out of treatment because we were not only failing to help but also sometimes making things worse.

A turning point arrived in 1980, when a group of Vietnam veterans, aided by the New York psychoanalysts Chaim Shatan and Robert J. Lifton, successfully lobbied the American Psychiatric Association to create a new diagnosis: posttraumatic stress disorder (PTSD), which described a cluster of symptoms that was common, to a greater or lesser extent, to all of our veterans. Systematically identifying the symptoms and grouping them together into a disorder finally gave a name to the suffering of people who were overwhelmed by horror and helplessness. With the conceptual framework of PTSD in place, the stage was set for a radical change in our understanding of our patients. This eventually led to an explosion of research and attempts at finding effective treatments.

Inspired by the possibilities presented by this new diagnosis, I proposed a study on the biology of traumatic memories to the VA. Did the memories of those suffering from PTSD differ from those of others? For most people the memory of an unpleasant event eventually fades or is transformed into something more benign. But most of our patients were unable to make their past into a story that happened long ago?

The opening line of the grant rejection read: "It has never been shown that PTSD is relevant to the mission of the Veterans Administration." Since then, of course, the mission of the VA has become organized around the diagnosis of PTSD and brain injury, and considerable resources are dedicated to applying "evidence-based treatments" to traumatized war veterans. But at the time things were different and, unwilling to keep working in an organization whose view of reality was so at odds with my own, I handed in my resignation; in 1982 I took a position at the Massachusetts Mental Health Center, the Harvard teaching hospital where I had trained to become a psychiatrist.

My new responsibility was to teach a fledgling area of study: psychopharmacology, the administration of drugs to alleviate mental illness.

In my new job I was confronted on an almost daily basis with issues I thought I had left behind at the VA. My experience with combat veterans had so sensitized me to the impact of trauma that I now listened with a very different ear when depressed and anxious patients told me stories of molestation and family violence. I was particularly struck by how many female patients spoke of being sexually abused as children. This was puzzling, as the standard textbook of psychiatry at the time stated that incest was extremely rare in the United States, occurring about once in every million women.⁸ Given that there were then only about one hundred million women living in the United States, I wondered how forty seven, almost half of them, had found their way to my office in the basement of the hospital.

Furthermore, the textbook said, "There is little agreement about the role of father-daughter incest as a source of serious subsequent psychopathology." My patients with incest histories were hardly free of "subsequent psychopathology"—they were profoundly depressed, confused, and often engaged in bizarrely self-harmful behaviors, such as cutting themselves with razor blades. The textbook went on to practically endorse incest, explaining that "such incestuous activity diminishes the subject's chance of psychosis and allows for a better adjustment to the external world."⁹ In fact, as it turned out, incest had devastating effects on women's well-being.

In many ways these patients were not so different from the veterans I had just left behind at the VA. They also had nightmares and flashbacks. They also alternated between occasional bouts of explosive rage and long periods of being emotionally shut down. Most of them had great difficulty getting along with other people and had trouble maintaining meaningful relationships.

As we now know, war is not the only calamity that leaves human lives in ruins. While about a quarter of the soldiers who serve in war zones are expected to develop serious posttraumatic problems,¹⁰ the majority of Americans experience a violent crime at some time during their lives, and more accurate reporting has revealed that twelve million women in the United States have been victims of rape. More than half of all rapes occur in girls below age fifteen.¹¹ For many people the war begins at home: Each year about three million children in the United States are reported as victims of child abuse and neglect. One million of these cases are serious and credible enough to force local child protective services or the courts to take action.¹² In other words, for every soldier who serves in a war zone abroad, there are

ten children who are endangered in their own homes. This is particularly tragic, since it is very difficult for growing children to recover when the source of terror and pain is not enemy combatants but their own caretakers.

A NEW UNDERSTANDING

In the three decades since I met Tom, we have learned an enormous amount not only about the impact and manifestations of trauma but also about ways to help traumatized people find their way back. Since the early 1990s brain-imaging tools have started to show us what actually happens inside the brains of traumatized people. This has proven essential to understanding the damage inflicted by trauma and has guided us to formulate entirely new avenues of repair.

We have also begun to understand how overwhelming experiences affect our innermost sensations and our relationship to our physical reality—the core of who we are. We have learned that trauma is not just an event that took place sometime in the past; it is also the imprint left by that experience on mind, brain, and body. This imprint has ongoing consequences for how the human organism manages to survive in the present.

Trauma results in a fundamental reorganization of the way mind and brain manage perceptions. It changes not only how we think and what we think about, but also our very capacity to think. We have discovered that helping victims of trauma find the words to describe what has happened to them is profoundly meaningful, but usually it is not enough. The act of telling the story doesn't necessarily alter the automatic physical and hormonal responses of bodies that remain hypervigilant, prepared to be assaulted or violated at any time. For real change to take place, the body needs to learn that the danger has passed and to live in the reality of the present. Our search to understand trauma has led us to think differently not only about the structure of the mind but also about the processes by which it heals.

CHAPTER 2

REVOLUTIONS IN
UNDERSTANDING MIND
AND BRAIN

The greater the doubt, the greater the awakening; the smaller the doubt, the smaller the awakening.

—C.-C. Chang, *The Practice of Zen*

You live through that little piece of time that is yours, but that piece of time is not only your own life, it is the summing-up of all the other lives that are simultaneous with yours. . . . What you are is an expression of History.

—Robert Penn Warren, *World Enough and Time*

In the late 1960s, during a year off between my first and second years of medical school, I became an accidental witness to a profound transition in the medical approach to mental suffering. I had landed a plum job as an attendant on a research ward at the Massachusetts Mental Health Center, where I was in charge of organizing recreational activities for the patients. MMHC had long been considered one of the finest psychiatric hospitals in the country, a jewel in the crown of the Harvard Medical School teaching empire. The goal of the research on my ward was to determine whether psychotherapy or medication was the best way to treat young people who had suffered a first mental breakdown diagnosed as schizophrenia.

The talking cure, an offshoot of Freudian psychoanalysis, was still the primary treatment for mental illness at MMHC. However, in the early 1950s

a group of French scientists had discovered a new compound, chlorpromazine (sold under the brand name Thorazine), that could “tranquelize” patients and make them less agitated and delusional. That inspired hope that drugs could be developed to treat serious mental problems such as depression, panic, anxiety, and mania, as well as to manage some of the most disturbing symptoms of schizophrenia.

As an attendant I had nothing to do with the research aspect of the ward and was never told what treatment any of the patients was receiving. They were all close to my age—college students from Harvard, MIT, and Boston University. Some had tried to kill themselves; others cut themselves with knives or razor blades; several had attacked their roommates or had otherwise terrified their parents or friends with their unpredictable, irrational behavior. My job was to keep them involved in normal activities for college students, such as eating at the local pizza parlor, camping in a nearby state forest, attending Red Sox games, and sailing on the Charles River.

Totally new to the field, I sat in rapt attention during ward meetings, trying to decipher the patients’ complicated speech and logic. I also had to learn to deal with their irrational outbursts and terrified withdrawal. One morning I found a patient standing like a statue in her bedroom with one arm raised in a defensive gesture, her face frozen in fear. She remained there, immobile, for at least twelve hours. The doctors gave me the name for her condition, catatonia, but even the textbooks I consulted didn’t tell me what could be done about it. We just let it run its course.

TRAUMA BEFORE DAWN

I spent many nights and weekends on the unit, which exposed me to things the doctors never saw during their brief visits. When patients could not sleep, they often wandered in their tightly wrapped bathrobes into the darkened nursing station to talk. The quiet of the night seemed to help them open up, and they told me stories about having been hit, assaulted, or molested, often by their own parents, sometimes by relatives, classmates, or neighbors. They shared memories of lying in bed at night, helpless and terrified, hearing their mother being beaten by their father or a boyfriend, hearing their parents yell horrible threats at each other, hearing the sounds of furniture breaking. Others told me about fathers who came home drunk—hearing their footsteps on the landing and how they waited for them to come in, pull them out of bed, and punish them for some imagined offense. Several of the women recalled lying awake, motionless, waiting for the inevitable—a brother or father coming in to molest them.

During morning rounds the young doctors presented their cases to their supervisors, a ritual that the ward attendants were allowed to observe in silence. They rarely mentioned stories like the ones I'd heard. However, many later studies have confirmed the relevance of those midnight confessions: We now know that more than half the people who seek psychiatric care have been assaulted, abandoned, neglected, or even raped as children, or have witnessed violence in their families.¹ But such experiences seemed to be off the table during rounds. I was often surprised by the dispassionate way patients' symptoms were discussed and by how much time was spent on trying to manage their suicidal thoughts and self-destructive behaviors, rather than on understanding the possible causes of their despair and helplessness. I was also struck by how little attention was paid to their accomplishments and aspirations; whom they cared for, loved, or hated; what motivated and engaged them, what kept them stuck, and what made them feel at peace—the ecology of their lives.

A few years later, as a young doctor, I was confronted with an especially stark example of the medical model in action. I was then moonlighting at a Catholic hospital, doing physical examinations on women who'd been admitted to receive electroshock treatment for depression. Being my curious immigrant self, I'd look up from their charts to ask them about their lives. Many of them spilled out stories about painful marriages, difficult children, and guilt over abortions. As they spoke, they visibly brightened and often thanked me effusively for listening to them. Some of them wondered if they really still needed electroshock after having gotten so much off their chests. I always felt sad at the end of these meetings, knowing that the treatments that would be administered the following morning would erase all memory of our conversation. I did not last long in that job.

On my days off from the ward at MMHC, I often went to the Countway Library of Medicine to learn more about the patients I was supposed to help. One Saturday afternoon I came across a treatise that is still revered today: Eugen Bleuler's 1911 textbook *Dementia Praecox*. Bleuler's observations were fascinating:

Among schizophrenic body hallucinations, the sexual ones are by far the most frequent and the most important. All the raptures and joys of normal and abnormal sexual satisfaction are experienced by these patients, but even more frequently every obscene and disgusting practice which the most extravagant fantasy can conjure up. Male patients have their semen drawn off; painful erections are stimulated. The

women patients are raped and injured in the most devilish ways.... In spite of the symbolic meaning of many such hallucinations, the majority of them correspond to real sensations.²

This made me wonder: Our patients had hallucinations—the doctors routinely asked about them and noted them as signs of how disturbed the patients were. But if the stories I'd heard in the wee hours were true, could it be that these "hallucinations" were in fact the fragmented memories of real experiences? Were hallucinations just the concoctions of sick brains? Could people make up physical sensations they had never experienced? Was there a clear line between creativity and pathological imagination? Between memory and imagination? These questions remain unanswered to this day, but research has shown that people who've been abused as children often feel sensations (such as abdominal pain) that have no obvious physical cause; they hear voices warning of danger or accusing them of heinous crimes.

There was no question that many patients on the ward engaged in violent, bizarre, and self-destructive behaviors, particularly when they felt frustrated, thwarted, or misunderstood. They threw temper tantrums, hurled plates, smashed windows, and cut themselves with shards of glass. At that time I had no idea why someone might react to a simple request ("Let me clean that goop out of your hair") with rage or terror. I usually followed the lead of the experienced nurses, who signaled when to back off or, if that did not work, to restrain a patient. I was surprised and alarmed by the satisfaction I sometimes felt after I'd wrestled a patient to the floor so a nurse could give an injection, and I gradually realized how much of our professional training was geared to helping us stay in control in the face of terrifying and confusing realities.

Sylvia was a gorgeous nineteen-year-old Boston University student who usually sat alone in the corner of the ward, looking frightened to death and virtually mute, but whose reputation as the girlfriend of an important Boston mafioso gave her an aura of mystery. After she refused to eat for more than a week and rapidly started to lose weight, the doctors decided to force-feed her. It took three of us to hold her down, another to push the rubber feeding tube down her throat, and a nurse to pour the liquid nutrients into her stomach. Later, during a midnight confession, Sylvia spoke timidly and hesitantly about her childhood sexual abuse by her brother and uncle. I realized then our display of "caring" must have felt to her much like a gang rape. This experience, and others like it, helped me formulate this rule for my students: If you do something to a patient that you would not do to your friends or

children, consider whether you are unwittingly replicating a trauma from the patient's past.

In my role as recreation leader I noticed other things: As a group the patients were strikingly clumsy and physically uncoordinated. When we went camping, most of them stood helplessly by as I pitched the tents. We almost capsized once in a squall on the Charles River because they huddled rigidly in the lee, unable to grasp that they needed to shift position to balance the boat. In volleyball games the staff members invariably were much better coordinated than the patients. Another characteristic they shared was that even their most relaxed conversations seemed stilted, lacking the natural flow of gestures and facial expressions that are typical among friends. The relevance of these observations became clear only after I'd met the body-based therapists Peter Levine and Pat Ogden; in the later chapters I'll have a lot to say about how trauma is held in people's bodies.

MAKING SENSE OF SUFFERING

After my year on the research ward I resumed medical school and then, as a newly minted MD, returned to MMHC to be trained as a psychiatrist, a program to which I was thrilled to be accepted. Many famous psychiatrists had trained there, including Eric Kandel, who later won the Nobel Prize in Physiology and Medicine. Allan Hobson discovered the brain cells responsible for the generation of dreams in a lab in the hospital basement while I trained there, and the first studies on the chemical underpinnings of depression were also conducted at MMHC. But for many of us residents, the greatest draw was the patients. We spent six hours each day with them and then met as a group with senior psychiatrists to share our observations, pose our questions, and compete to make the wittiest remarks.

Our great teacher, Elvin Semrad, actively discouraged us from reading psychiatry textbooks during our first year. (This intellectual starvation diet may account for the fact that most of us later became voracious readers and prolific writers.) Semrad did not want our perceptions of reality to become obscured by the pseudocertainties of psychiatric diagnoses. I remember asking him once: "What would you call this patient—schizophrenic or schizoaffective?" He paused and stroked his chin, apparently in deep thought. "I think I'd call him Michael McIntyre," he replied.

Semrad taught us that most human suffering is related to love and loss and that the job of therapists is to help people "acknowledge, experience, and bear" the reality of life—with all its pleasures and heartbreak. "The greatest

sources of our suffering are the lies we tell ourselves," he'd say, urging us to be honest with ourselves about every facet of our experience. He often said that people can never get better without knowing what they know and feeling what they feel.

I remember being surprised to hear this distinguished old Harvard professor confess how comforted he was to feel his wife's burn against him as he fell asleep at night. By disclosing such simple human needs in himself he helped us recognize how basic they were to our lives. Failure to attend to them results in a stunted existence, no matter how lofty our thoughts and worldly accomplishments. Healing, he told us, depends on experiential knowledge: You can be fully in charge of your life only if you can acknowledge the reality of your body, in all its visceral dimensions.

Our profession, however, was moving in a different direction. In 1968 the *American Journal of Psychiatry* had published the results of the study from the ward where I'd been an attendant. They showed unequivocally that schizophrenic patients who received drugs alone had a better outcome than those who talked three times a week with the best therapists in Boston.³ This study was one of many milestones on a road that gradually changed how medicine and psychiatry approached psychological problems: from infinitely variable expressions of intolerable feelings and relationships to a brain-disease model of discrete "disorders."

The way medicine approaches human suffering has always been determined by the technology available at any given time. Before the Enlightenment aberrations in behavior were ascribed to God, sin, magic, witches, and evil spirits. It was only in the nineteenth century that scientists in France and Germany began to investigate behavior as an adaptation to the complexities of the world. Now a new paradigm was emerging: Anger, lust, pride, greed, avarice, and sloth—as well as all the other problems we humans have always struggled to manage—were recast as "disorders" that could be fixed by the administration of appropriate chemicals.⁴ Many psychiatrists were relieved and delighted to become "real scientists," just like their med school classmates who had laboratories, animal experiments, expensive equipment, and complicated diagnostic tests, and set aside the woolly-headed theories of philosophers like Freud and Jung. A major textbook of psychiatry went so far as to state: "The cause of mental illness is now considered an aberration of the brain, a chemical imbalance."⁵

Like my colleagues, I eagerly embraced the pharmacological revolution. In 1973 I became the first chief resident in psychopharmacology at MMHC. I may also have been the first psychiatrist in Boston to administer lithium to

a manic-depressive patient. (I'd read about John Cade's work with lithium in Australia, and I received permission from a hospital committee to try it.)

On lithium a woman who had been manic every May for the past thirty-five years, and suicidally depressed every November, stopped cycling and remained stable for the three years she was under my care. I was also part of the first U.S. research team to test the antipsychotic Clozaryl on chronic patients who were warehoused in the back wards of the old insane asylums.⁶ Some of their responses were miraculous: People who had spent much of their lives locked in their own separate, terrifying realities were now able to return to their families and communities; patients mired in darkness and despair started to respond to the beauty of human contact and the pleasures of work and play. These amazing results made us optimistic that we could finally conquer human misery.

Antipsychotic drugs were a major factor in reducing the number of people living in mental hospitals in the United States, from over 500,000 in 1955 to fewer than 100,000 in 1996.⁷ For people today who did not know the world before the advent of these treatments, the change is almost unimaginable. As a first-year medical student I visited Kankakee State Hospital in Illinois and saw a burly ward attendant hose down dozens of filthy, naked, incoherent patients in an unfurnished dayroom supplied with gutters for the runoff water. This memory now seems more like a nightmare than like something I witnessed with my own eyes. My first job after finishing my residency in 1974 was as the second-to-last director of a once-venerable institution, the Boston State Hospital, which had formerly housed thousands of patients and been spread over hundreds of acres with dozens of buildings, including greenhouses, gardens, and workshops—most of them by then in ruins. During my time there patients were gradually dispersed into "the community," the blanket term for the anonymous shelters and nursing homes where most of them ended up. (Ironically, the hospital was started as an "asylum," a word meaning "sanctuary" that gradually took on a sinister connotation. It actually did offer a sheltered community where everybody knew the patients' names and idiosyncrasies.) In 1979, shortly after I went to work at the VA, the Boston State Hospital's gates were permanently locked, and it became a ghost town.

During my time at Boston State I continued to work in the MMHC psychopharmacology lab, which was now focusing on another direction for research. In the 1960s scientists at the National Institutes of Health had begun to develop techniques for isolating and measuring hormones and neurotransmitters in blood and the brain. Neurotransmitters are chemical

messengers that carry information from neuron to neuron, enabling us to engage effectively with the world.

Now that scientists were finding evidence that abnormal levels of norepinephrine were associated with depression, and of dopamine with schizophrenia, there was hope that we could develop drugs that target specific brain abnormalities. That hope was never fully realized, but our efforts to measure how drugs could affect mental symptoms led to another profound change in the profession. Researchers' need for a precise and systematic way to communicate their findings resulted in the development of the so-called Research Diagnostic Criteria, to which I contributed as a lowly research assistant. These eventually became the basis for the first systematic system to diagnose psychiatric problems, the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (DSM), which is commonly referred to as the "bible of psychiatry." The foreword to the landmark 1980 DSM-III was appropriately modest and acknowledged that this diagnostic system was imprecise—so imprecise that it never should be used for forensic or insurance purposes.⁸ As we will see, that modesty was tragically short-lived.

INESCAPABLE SHOCK

Preoccupied with so many lingering questions about traumatic stress, I became intrigued with the idea that the nascent field of neuroscience could provide some answers and started to attend the meetings of the American College of Neuropsychopharmacology (ACNP). In 1984 the ACNP offered many fascinating lectures about drug development, but it was not until a few hours before my scheduled flight back to Boston that I heard a presentation by Steven Maier of the University of Colorado, who had collaborated with Martin Seligman of the University of Pennsylvania. His topic was learned helplessness in animals. Maier and Seligman had repeatedly administered painful electric shocks to dogs who were trapped in locked cages. They called this condition "inescapable shock."⁹ Being a dog lover, I realized that I could never have done such research myself, but I was curious about how this cruelty would affect the animals.

After administering several courses of electric shock, the researchers opened the doors of the cages and then shocked the dogs again. A group of control dogs who had never been shocked before immediately ran away, but the dogs who had earlier been subjected to inescapable shock made no attempt to flee, even when the door was wide open—they just lay there,

whimpering and defecating. The mere opportunity to escape does not necessarily make traumatized animals, or people, take the road to freedom. Like Maier and Seligman's dogs, many traumatized people simply give up. Rather than risk experimenting with new options they stay stuck in the fear they know.

I was riveted by Maier's account. What they had done to these poor dogs was exactly what had happened to my traumatized human patients. They, too, had been exposed to somebody (or something) who had inflicted terrible harm on them—harm they had no way of escaping. I made a rapid mental review of the patients I had treated. Almost all had in some way been trapped or immobilized, unable to take action to stave off the inevitable. Their fight/flight response had been thwarted, and the result was either extreme agitation or collapse.

Maier and Seligman also found that traumatized dogs secreted much larger amounts of stress hormones than was normal. This supported what we were beginning to learn about the biological underpinnings of traumatic stress. A group of young researchers, among them Steve Southwick and John Krystal at Yale, Arieh Shalev at Hadassah Medical School in Jerusalem, Frank Putnam at the National Institute of Mental Health (NIMH), and Roger Pitman, later at Harvard, were all finding that traumatized people keep secreting large amounts of stress hormones long after the actual danger has passed, and Rachel Yehuda at Mount Sinai in New York confronted us with her seemingly paradoxical findings that the levels of the stress hormone cortisol are low in PTSD. Her discoveries only started to make sense when her research clarified that cortisol puts an end to the stress response by sending an all-safe signal, and that, in PTSD, the body's stress hormones do, in fact, not return to baseline after the threat has passed.

Ideally our stress hormone system should provide a lightning-fast response to threat, but then quickly return us to equilibrium. In PTSD patients, however, the stress hormone system fails at this balancing act. Fight/flight/freeze signals continue after the danger is over, and, as in the case of the dogs, do not return to normal. Instead, the continued secretion of stress hormones is expressed as agitation and panic and, in the long term, wreaks havoc with their health.

I missed my plane that day because I had to talk with Steve Maier. His workshop offered clues not only about the underlying problems of my patients but also potential keys to their resolution. For example, he and Seligman had found that the only way to teach the traumatized dogs to get off the electric grids when the doors were open was to repeatedly drag them out of their

cages so they could physically experience how they could get away. I wondered if we also could help my patients with their fundamental orientation that there was nothing they could do to defend themselves? Did my patients also need to have *physical* experiences to restore a visceral sense of control? What if they could be taught to physically move to escape a potentially threatening situation that was similar to the trauma in which they had been trapped and immobilized? As I will discuss in the treatment part 5 of this book, that was one of the conclusions I eventually reached.

Further animal studies involving mice, rats, cats, monkeys, and elephants brought more intriguing data.¹⁰ For example, when researchers played a loud, intrusive sound, mice that had been raised in a warm nest with plenty of food scurried home immediately. But another group, raised in a noisy nest with scarce food supplies, also ran for home, even after spending time in more pleasant surroundings.¹¹

Scared animals return home, regardless of whether home is safe or frightening. I thought about my patients with abusive families who kept going back to be hurt again. Are traumatized people condemned to seek refuge in what is familiar? If so, why, and is it possible to help them become attached to places and activities that are safe and pleasurable?¹²

ADDICTED TO TRAUMA: THE PAIN OF PLEASURE AND THE PLEASURE OF PAIN

One of the things that struck my colleague Mark Greenberg and me when we ran therapy groups for Vietnam combat veterans was how, despite their feelings of horror and grief, many of them seemed to come to life when they talked about their helicopter crashes and their dying comrades. (Former *New York Times* correspondent Chris Hedges, who covered a number of brutal conflicts, entitled his book *War Is a Force That Gives Us Meaning*.)¹³ Many traumatized people seem to seek out experiences that would repel most of us,¹⁴ and patients often complain about a vague sense of emptiness and boredom when they are not angry, under duress, or involved in some dangerous activity.

My patient Julia was brutally raped at gunpoint in a hotel room at age sixteen. Shortly thereafter she got involved with a violent pimp who prostituted her. He regularly beat her up. She was repeatedly jailed for prostitution, but she always went back to her pimp. Finally her grandparents intervened and paid for an intense rehab program. After she successfully completed inpatient treatment, she started working as a receptionist and taking courses

at a local college. In her sociology class she wrote a term paper about the liberating possibilities of prostitution, for which she read the memoirs of several famous prostitutes. She gradually dropped all her other courses. A brief relationship with a classmate quickly went sour—he bored her to tears, she said, and she was repelled by his boxer shorts. She then picked up an addict on the subway who first beat her up and then started to stalk her. She finally became motivated to return to treatment when she was once again severely beaten.

Freud had a term for such traumatic reenactments: “the compulsion to repeat.” He and many of his followers believed that reenactments were an unconscious attempt to get control over a painful situation and that they eventually could lead to mastery and resolution. There is no evidence for that theory—repetition leads only to further pain and self-hatred. In fact, even reliving the trauma repeatedly in therapy may reinforce preoccupation and fixation.

Mark Greenberg and I decided to learn more about attractors—the things that draw us, motivate us, and make us feel alive. Normally attractors are meant to make us feel better. So, why are so many people attracted to dangerous or painful situations? We eventually found a study that explained how activities that cause fear or pain can later become thrilling experiences.¹⁵ In the 1970s Richard Solomon of the University of Pennsylvania had shown that the body learns to adjust to all sorts of stimuli. We may get hooked on recreational drugs because they right away make us feel so good, but activities like sauna bathing, marathon running, or parachute jumping, which initially cause discomfort and even terror, can ultimately become very enjoyable. This gradual adjustment signals that a new chemical balance has been established within the body, so that marathon runners, say, get a sense of well-being and exhilaration from pushing their bodies to the limit.

At this point, just as with drug addiction, we start to crave the activity and experience withdrawal when it's not available. In the long run people become more preoccupied with the pain of withdrawal than the activity itself. This theory could explain why some people hire someone to beat them, or burn themselves with cigarettes, or why they are only attracted to people who hurt them. Fear and aversion, in some perverse way, can be transformed into pleasure.

Solomon hypothesized that endorphins—the morphinelike chemicals that the brain secretes in response to stress—play a role in the paradoxical addictions he described. I thought of his theory again when my library habit led me to a paper titled “Pain in Men Wounded in Battle,” published in 1946.

Having observed that 75 percent of severely wounded soldiers on the Italian front did not request morphine, a surgeon by the name of Henry K. Beecher speculated that “strong emotions can block pain.”¹⁶

Were Beecher's observations relevant to people with PTSD? Mark Greenberg, Roger Pitman, Scott Orr, and I decided to ask eight Vietnam combat veterans if they would be willing to take a standard pain test while they watched scenes from a number of movies. The first clip we showed was from Oliver Stone's graphically violent *Platoon* (1986), and while it ran we measured how long the veterans could keep their right hands in a bucket of ice water. We then repeated this process with a peaceful (and long-forgotten) movie clip. Seven of the eight veterans kept their hands in the painfully cold water 30 percent longer during *Platoon*. We then calculated that the amount of analgesia produced by watching fifteen minutes of a combat movie was equivalent to that produced by being injected with eight milligrams of morphine, about the same dose a person would receive in an emergency room for crushing chest pain.

We concluded that Beecher's speculation that “strong emotions can block pain” was the result of the release of morphinelike substances manufactured in the brain. This suggested that for many traumatized people, reexposure to stress might provide a similar relief from anxiety.¹⁷ It was an interesting experiment, but it did not fully explain why Julia kept going back to her violent pimp.

SOOTHING THE BRAIN

The 1985 ACNP meeting was, if possible, even more thought provoking than the previous year's session. Kings College professor Jeffrey Gray gave a talk about the amygdala, a cluster of brain cells that determines whether a sound, image, or body sensation is perceived as a threat. Gray's data showed that the sensitivity of the amygdala depended, at least in part, on the amount of the neurotransmitter serotonin in that part of the brain. Animals with low serotonin levels were hyperreactive to stressful stimuli (like loud sounds), while higher levels of serotonin dampened their fear system, making them less likely to become aggressive or frozen in response to potential threats.¹⁸

That struck me as an important finding: My patients were always blowing up in response to small provocations and felt devastated by the slightest rejection. I became fascinated by the possible role of serotonin in PTSD. Other researchers had shown that dominant male monkeys had much higher levels of brain serotonin than lower-ranking animals but that their serotonin

levels dropped when they were prevented from maintaining eye contact with the monkeys they had once lorded over. In contrast, low-ranking monkeys who were given serotonin supplements emerged from the pack to assume leadership.¹⁹ The social environment interacts with brain chemistry. Manipulating a monkey into a lower position in the dominance hierarchy made his serotonin drop, while chemically enhancing serotonin elevated the rank of former subordinates.

The implications for traumatized people were obvious. Like Gray's low-serotonin animals, they were hyperreactive, and their ability to cope socially was often compromised. If we could find ways to increase brain serotonin levels, perhaps we could address both problems simultaneously. At that same 1985 meeting I learned that drug companies were developing two new products to do precisely that, but since neither was yet available, I experimented briefly with the health-food-store supplement L-tryptophan, which is a chemical precursor of serotonin in the body. (The results were disappointing.) One of the drugs under investigation never made it to the market. The other was fluoxetine, which, under the brand name Prozac, became one of the most successful psychoactive drugs ever created.

On Monday, February 8, 1988, Prozac was released by the drug company Eli Lilly. The first patient I saw that day was a young woman with a horrendous history of childhood abuse who was now struggling with bulimia—she basically spent much of her life bingeing and purging. I gave her a prescription for this brand-new drug, and when she returned on Thursday she said, "I've had a very different last few days. Late when I was hungry, and the rest of the time I did my schoolwork." This was one of the most dramatic statements I had ever heard in my office.

On Friday I saw another patient to whom I'd given Prozac the previous Monday. She was a chronically depressed mother of two school-aged children, preoccupied with her failures as a mother and wife and overwhelmed by demands from the parents who had badly mistreated her as a child. After four days on Prozac she asked me if she could skip her appointment the following Monday, which was Presidents' Day. "After all," she explained, "I've never taken my kids skiing—my husband always does—and they are off that day. It would really be nice for them to have some good memories of us having fun together."

This was a patient who had always struggled merely to get through the day. After her appointment I called someone I knew at Eli Lilly and said, "You have a drug that helps people to be in the present, instead of being locked in

the past." Lilly later gave me a small grant to study the effects of Prozac on PTSD in sixty-four people—twenty-two women and forty-two men—the first study of the effects of this new class of drugs on PTSD. Our Trauma Clinic team enrolled thirty-three nonveterans and my collaborators, former colleagues at the VA, enrolled thirty-one combat veterans. For eight weeks half of each group received Prozac and the other half a placebo. The study was blinded: Neither we nor the patients knew which substance they were taking, so that our preconceptions could not skew our assessments.

Everyone in the study—even those who had received the placebo—improved, at least to some degree. Most treatment studies of PTSD find a significant placebo effect. People who screw up their courage to participate in a study for which they aren't paid, in which they're repeatedly poked with needles, and in which they have only a fifty-fifty chance of getting an active drug are intrinsically motivated to solve their problem. Maybe their reward is only the attention paid to them, the opportunity to respond to questions about how they feel and think. But maybe the mother's kisses that soothe her child's scrapes are "just" a placebo as well.

Prozac worked significantly better than the placebo for the patients from the Trauma Clinic. They slept more soundly; they had more control over their emotions and were less preoccupied with the past than those who received a sugar pill.²⁰ Surprisingly, however, the Prozac had no effect at all on the combat veterans at the VA—their PTSD symptoms were unchanged. These results have held true for most subsequent pharmacological studies on veterans: While a few have shown modest improvements, most have not benefited at all. I have never been able to explain this, and I cannot accept the most common explanation: that receiving a pension or disability benefits prevents people from getting better. After all, the amygdala knows nothing of pensions—it just detects threats.

Nonetheless, medications such as Prozac and related drugs like Zoloft, Celexa, Cymbalta, and Paxil, have made a substantial contribution to the treatment of trauma-related disorders. In our Prozac study we used the Rorschach test to measure how traumatized people perceive their surroundings. These data gave us an important clue to how this class of drugs (formally known as selective serotonin reuptake inhibitors, or SSRIs) might work. Before taking Prozac these patients' emotions controlled their reactions. I think of a Dutch patient, for example (not in the Prozac study) who came to see me for treatment for a childhood rape and who was convinced that I would rape her as soon as she heard my Dutch accent. Prozac made a radical

difference: It gave PTSD patients a sense of perspective²¹ and helped them to gain considerable control over their impulses. Jeffrey Gray must have been right: When their serotonin levels rose, many of my patients became less reactive.

THE TRIUMPH OF PHARMACOLOGY

It did not take long for pharmacology to revolutionize psychiatry. Drugs gave doctors a greater sense of efficacy and provided a tool beyond talk therapy. Drugs also produced income and profits. Grants from the pharmaceutical industry provided us with laboratories filled with energetic graduate students and sophisticated instruments. Psychiatry departments, which had always been located in the basements of hospitals, started to move up, both in terms of location and prestige.

One symbol of this change occurred at MMHC, where in the early 1990s the hospital's swimming pool was paved over to make space for a laboratory, and the indoor basketball court was carved up into cubicles for the new medication clinic. For decades doctors and patients had democratically shared the pleasures of splashing in the pool and passing balls down the court. I'd spent hours in the gym with patients back when I was a ward attendant. It was the one place where we all could restore a sense of physical well-being, an island in the midst of the misery we faced every day. Now it had become a place for patients to "get fixed."

The drug revolution that started out with so much promise may in the end have done as much harm as good. The theory that mental illness is caused primarily by chemical imbalances in the brain that can be corrected by specific drugs has become broadly accepted, by the media and the public as well as by the medical profession.²² In many places drugs have displaced therapy and enabled patients to suppress their problems without addressing the underlying issues. Antidepressants can make all the difference in the world in helping with day-to-day functioning, and if it comes to a choice between taking a sleeping pill and drinking yourself into a stupor every night to get a few hours of sleep, there is no question which is preferable. For people who are exhausted from trying to make it on their own through yoga classes, workout routines, or simply toughing it out, medications often can bring lifesaving relief. The SSRIs can be very helpful in making traumatized people less enslaved by their emotions, but they should only be considered adjuncts in their overall treatment.²³

After conducting numerous studies of medications for PTSD, I have come to realize that psychiatric medications have a serious downside, as they

may deflect attention from dealing with the underlying issues. The brain-disease model takes control over people's fate out of their own hands and puts doctors and insurance companies in charge of fixing their problems.

Over the past three decades psychiatric medications have become a mainstay in our culture, with dubious consequences. Consider the case of antidepressants. If they were indeed as effective as we have been led to believe, depression should by now have become a minor issue in our society. Instead, even as antidepressant use continues to increase, it has not made a dent in hospital admissions for depression. The number of people treated for depression has tripled over the past two decades, and one in ten Americans now take antidepressants.²⁴

The new generation of antipsychotics, such as Abilify, Risperdal, Zyprexa, and Seroquel, are the top-selling drugs in the United States. In 2012 the public spent \$1,526,228,000 on Abilify, more than on any other medication. Number three was Cymbalta, an antidepressant that sold well over a billion dollars' worth of pills,²⁵ even though it has never been shown to be superior to older antidepressants like Prozac, for which much cheaper generics are available. Medicaid, the government health program for the poor, spends more on antipsychotics than on any other class of drugs.²⁶ In 2008, the most recent year for which complete data are available, it funded \$3.6 billion for antipsychotic medications, up from \$1.65 billion in 1999. The number of people under the age of twenty receiving Medicaid-funded prescriptions for antipsychotic drugs tripled between 1999 and 2008. On November 4, 2013, Johnson & Johnson agreed to pay more than \$2.2 billion in criminal and civil fines to settle accusations that it had improperly promoted the antipsychotic drug Risperdal to older adults, children, and people with developmental disabilities.²⁷ But nobody is holding the doctors who prescribed them accountable.

Half a million children in the United States currently take antipsychotic drugs. Children from low-income families are four times as likely as privately insured children to receive antipsychotic medicines. These medications often are used to make abused and neglected children more tractable. In 2008 19,045 children age five and under were prescribed antipsychotics through Medicaid.²⁸ One study, based on Medicaid data in thirteen states, found that 12.4 percent of children in foster care received antipsychotics, compared with 1.4 percent of Medicaid-eligible children in general.²⁹ These medications make children more manageable and less aggressive, but they also interfere with motivation, play, and curiosity, which are indispensable for maturing into a well-functioning and contributing member of society.

Children who take them are also at risk of becoming morbidly obese and developing diabetes. Meanwhile, drug overdoses involving a combination of psychiatric and pain medications continue to rise.³⁰

Because drugs have become so profitable, major medical journals rarely publish studies on nondrug treatments of mental health problems.³¹ Practitioners who explore treatments are typically marginalized as “alternative.” Studies of nondrug treatments are rarely funded unless they involve so-called manualized protocols, where patients and therapists go through narrowly prescribed sequences that allow little fine-tuning to individual patients’ needs. Mainstream medicine is firmly committed to a better life through chemistry, and the fact that we can actually change our own physiology and inner equilibrium by means other than drugs is rarely considered.

ADAPTATION OR DISEASE?

The brain-disease model overlooks four fundamental truths: (1) our capacity to destroy one another is matched by our capacity to heal one another. Restoring relationships and community is central to restoring well-being; (2) language gives us the power to change ourselves and others by communicating our experiences, helping us to define what we know, and finding a common sense of meaning; (3) we have the ability to regulate our own physiology, including some of the so-called involuntary functions of the body and brain, through such basic activities as breathing, moving, and touching; and (4) we can change social conditions to create environments in which children and adults can feel safe and where they can thrive.

When we ignore these quintessential dimensions of humanity, we deprive people of ways to heal from trauma and restore their autonomy. Being a patient, rather than a participant in one’s healing process, separates suffering people from their community and alienates them from an inner sense of self. Given the limitations of drugs, I started to wonder if we could find more natural ways to help people deal with their post-traumatic responses.

CHAPTER 3

LOOKING INTO THE BRAIN: THE NEUROSCIENCE REVOLUTION

If we could look through the skull into the brain of a consciously thinking person, and if the place of optimal excitability were luminous, then we should see playing over the cerebral surface, a bright spot, with fantastic, waving borders constantly fluctuating in size and form, and surrounded by darkness, more or less deep, covering the rest of the hemisphere.

—Ivan Pavlov

You observe a lot by watching.

—Yogi Berra

In the early 1990s novel brain-imaging techniques opened up undreamed-of capacities to gain a sophisticated understanding about the way the brain processes information. Gigantic, multimillion-dollar machines based on advanced physics and computer technology rapidly made neuroscience into one of the most popular areas for research. Positron emission tomography (PET) and, later, functional magnetic resonance imaging (fMRI) enabled scientists to visualize how different parts of the brain are activated when people are engaged in certain tasks or when they remember events from the past. For the first time we could watch the brain as it processed memories, sensations, and emotions and begin to map the circuits of mind and consciousness. The earlier technology of measuring brain chemicals like serotonin or norepinephrine had enabled scientists to look at what *fueled* neural activity,