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Damaged

Why do some people turn into violent criminals?
New evidence suggests that it may all be in the brain

by Malcolm Gladwell

1.

On the morning of November 18, 1996, Joseph Paul Franklin was led into Division 15 of the St. Louis County Courthouse, in Clayton, Missouri. He was wearing a pair of black high-top sneakers, an orange jumpsuit with short sleeves that showed off his prison biceps, and a pair of thick black-rimmed glasses. There were two guards behind him, two guards in front of him, and four more guards stationed around the courtroom, and as he walked into the room-or, rather, shuffled, since his feet were manacled-Franklin turned to one of them and said "Wassup?" in a loud, Southern-accented voice. Then he sat down between his attorneys and stared straight ahead at the judge, completely still except for his left leg, which bounced up and down in an unceasing nervous motion.

Joseph Franklin takes credit for shooting and paralyzing Larry Flynt, the publisher of Hustler, outside a Lawrenceville, Georgia, courthouse in March of 1978, apparently because Flynt had printed photographs of a racially mixed couple. Two years later, he says, he gunned down the civil-rights leader Vernon Jordan outside a Marriott in Fort Wayne, Indiana, tearing a hole in Jordan's back the size of a fist. In the same period in the late seventies, as part of what he later described as a "mission" to rid America of blacks and Jews and of whites who like blacks and Jews, Franklin says that he robbed several banks, bombed a synagogue in Tennessee, killed two black men jogging with white women in Utah, shot a black man and a white woman coming out of a Pizza Hut in a suburb of Chattanooga, Tennessee, and on and on-a violent spree that may have spanned ten states and claimed close to twenty lives, and, following Franklin's arrest, in 1980, earned him six consecutive life sentences.

Two years ago, while Franklin was imprisoned in Marion Federal Penitentiary, in Illinois, he confessed to another crime. He was the one, he said, who had hidden in the bushes outside a synagogue in suburban St. Louis in the fall of 1977 and opened fire on a group of worshippers, killing forty-two-year-old Gerald Gordon. After the confession, the State of Missouri indicted him on one count of capital murder and two counts of assault. He was moved from Marion to the St. Louis County jail, and from there, on a sunny November morning last year, he was brought before Judge Robert Campbell, of the St. Louis County Circuit Court, so that it could be determined whether he was fit to stand trial-whether, in other words, embarking on a campaign to rid America of

Jews and blacks was an act of evil or an act of illness.

The prosecution went first. On a television set at one side of the courtroom, two videotapes were shown-one of an interview with Franklin by a local news crew and the other of Franklin's formal confession to the police. In both, he seems lucid and calm, patiently retracing how he planned and executed his attack on the synagogue. He explains that he bought the gun in a suburb of Dallas, answering a classified ad, so the purchase couldn't be traced. He drove to the St. Louis area and registered at a Holiday Inn. He looked through the Yellow Pages to find the names of synagogues. He filed the serial number off his rifle and bought a guitar case to carry the rifle in. He bought a bicycle. He scouted out a spot near his chosen synagogue from which he could shoot without being seen. He parked his car in a nearby parking lot and rode his bicycle to the synagogue. He lay in wait in the bushes for several hours, until congregants started to emerge. He fired five shots. He rode the bicycle back to the parking lot, climbed into his car, pulled out of the lot, checked his police scanner to see if he was being chased, then drove south, down I-55, back home toward Memphis.

In the interview with the news crew, Franklin answered every question, soberly and directly. He talked about his tattoos ("This one is the Grim Reaper. I got it in Dallas") and his heroes ("One person I like is Howard Stern. I like his honesty"), and he respectfully disagreed with the media's description of racially motivated crimes as "hate crimes," since, he said, "every murder is committed out of hate." In his confession to the police, after he detailed every step of the synagogue attack, Franklin was asked if there was anything he'd like to say. He stared thoughtfully over the top of his glasses. There was a long silence. "I can't think of anything," he answered. Then he was asked if he felt any remorse. There was another silence. "I can't say that I do," he said. He paused again, then added, "The only thing I'm sorry about is that it's not legal."

"What's not legal?"

Franklin answered as if he'd just been asked the time of day: "Killing Jews."

After a break for lunch, the defense called Dorothy Otnow Lewis, a psychiatrist at New York's Bellevue Hospital and a professor at New York University School of Medicine. Over the past twenty years, Lewis has examined, by her own rough estimate, somewhere between a hundred and fifty and two hundred murderers. She was the defense's only expert witness in the trial of Arthur Shawcross, the Rochester serial killer who strangled eleven prostitutes in the late eighties. She examined Joel Rifkin, the Long Island serial killer, and Mark David Chapman, who shot John Lennon-both for the defense. Once, in a Florida prison, she sat for hours talking with Ted Bundy. It was the day before his execution, and when they had finished Bundy bent down and kissed her cheek. "Bundy thought I was the only person who didn't want something from him," Lewis says. Frequently, Lewis works with Jonathan Pincus, a neurologist at Georgetown University. Lewis does the psychiatric examination; Pincus does the neurological examination. But Franklin put his foot down. He could tolerate being examined by a Jewish woman, evidently, but not by a Jewish man. Lewis testified alone.

Lewis is a petite woman in her late fifties, with short dark hair and large, liquid brown eyes. She was wearing a green blazer and a black skirt with a gold necklace, and she was so dwarfed by the witness

stand that from the back of the courtroom only her head was visible. Under direct examination she said that she had spoken with Franklin twice-once for six hours and once for less than half an hour-and had concluded that he was a paranoid schizophrenic: a psychotic whose thinking was delusional and confused, a man wholly unfit to stand trial at this time. She talked of brutal physical abuse he had suffered as a child. She mentioned scars on his scalp from blows Franklin had told her were inflicted by his mother. She talked about his obsessive desire to be castrated, his grandiosity, his belief that he may have been Jewish in an earlier life, his other bizarre statements and beliefs. At times, Lewis seemed nervous, her voice barely audible, but perhaps that was because Franklin was staring at her unblinkingly, his leg bouncing faster and faster under the table. After an hour, Lewis stepped down. She paused in front of Franklin and, ever the psychiatrist, suggested that when everything was over they should talk. Then she walked slowly through the courtroom, past the defense table and the guards, and out the door.

Later that day, on the plane home to New York City, Lewis worried aloud that she hadn't got her point across. Franklin, at least as he sat there in the courtroom, didn't seem insane. The following day, Franklin took the stand himself for two hours, during which he did his own psychiatric diagnosis, confessing to a few "minor neuroses," but not to being "stark raving mad," as he put it. Of the insanity defense, he told the court, "I think it is hogwash, to tell you the truth. I knew exactly what I was doing." During his testimony, Franklin called Lewis "a well-intentioned lady" who "seems to embellish her statements somewhat." Lewis seemed to sense that that was the impression she'd left: that she was overreaching, that she was some kind of caricature-liberal Jewish New York psychiatrist comes to Middle America to tell the locals to feel sorry for a murderer. Sure enough, a week later the Judge rejected Lewis's arguments and held Franklin competent to stand trial. But, flying back to New York, Lewis insisted that she wasn't making an ideological point of Franklin; rather, she was saying that she didn't feel that Franklin's brain worked the way brains are supposed to work-that he had identifiable biological and psychiatric problems that diminished his responsibility for his actions. "I just don't believe people are born evil," she said. "To my mind, that is mindless. Forensic psychiatrists tend to buy into the notion of evil. I felt that that's no explanation. The deed itself is bizarre, grotesque. But it's not evil. To my mind, evil bespeaks conscious control over something. Serial murderers are not in that category. They are driven by forces beyond their control."

The plane was in the air now. By some happy set of circumstances, Lewis had been bumped up to first class. She was sipping champagne. Her shoes were off. "You know, when I was leaving our last interview, he sniffed me right here," she said, and she touched the back of her neck and flared her nostrils in mimicry of Franklin's gesture. "He'd said to his attorney, 'You know, if you weren't here, I'd make a play for her.' " She had talked for six hours to this guy who hated Jews so much that he hid in the bushes and shot at them with a rifle, and he had come on to her, just like that. She shivered at the memory: "He said he wanted some pussy."

2.

When Dorothy Lewis graduated from Yale School of Medicine, in 1963, neurology, the study of the brain and the rest of the nervous system, and psychiatry, the study of behavior and personality,

were entirely separate fields. This was still the Freudian era. Little attempt was made to search for organic causes of criminality. When, after medical school, she began working with juvenile delinquents in New Haven, the theory was that these boys were robust, healthy. According to the prevailing wisdom, a delinquent was simply an ordinary kid who had been led astray by a troubled home life-by parents who were too irresponsible or too addled by drugs and alcohol to provide proper discipline. Lewis came from the archetypal do- gooding background-reared on Central Park West; schooled at Ethical Culture; a socialist mother who as a child had once introduced Eugene V. Debs at a political rally; father in the garment business; heated dinner-table conversations about the Rosenbergs-and she accepted this dogma. Criminals were just like us, only they had been given bad ideas about how to behave. The trouble was that when she began working with delinquents they didn't seem like that at all. They didn't lack for discipline. If anything, she felt, they were being disciplined too much. And these teenagers weren't robust and rowdy; on the contrary, they seemed to be damaged and impaired. "I was studying for my boards in psychiatry, and in order to do a good job you wanted to do a careful medical history and a careful mental-status exam," she says. "I discovered that many of these kids had had serious accidents, injuries, or illnesses that seemed to have affected the central nervous system and that hadn't been identified previously."

In 1976, she was given a grant by the State of Connecticut to study a group of nearly a hundred juvenile delinquents. She immediately went to see Pincus, then a young professor of neurology at Yale. They had worked together once before. "Dorothy came along and said she wanted to do this project with me," Pincus says. "She wanted to look at violence. She had this hunch that there was something physically wrong with these kids. I said, 'That's ridiculous. Everyone knows violence has nothing to do with neurology.' " At that point, Pincus recalls, he went to his bookshelf and began reading out loud from what was then the definitive work in the field: "Criminality and Psychiatric Disorders," by Samuel Guze, the chairman of the psychiatry department of Washington University, in St. Louis. "Sociopathy, alcoholism, and drug dependence are the psychiatric disorders characteristically associated with serious crime," he read. "Schizophrenia, primary affective disorders, anxiety neurosis, obsessional neurosis, phobic neurosis, and"-and there he paused-"brain syndromes are not." But Lewis would have none of it. "She said, 'We should do it anyway.' I said, 'I don't have the time.' She said, 'Jonathan, I can pay you.' So I would go up on Sunday, and I would examine three or four youths, just give them a standard neurological examination." But, after seeing the kids for himself, Pincus, too, became convinced that the prevailing wisdom about juvenile delinquents--and, by extension, about adult criminals--was wrong, and that Lewis was right. "Almost all the violent ones were damaged," Pincus recalls, shaking his head.

Over the past twenty years, Lewis and Pincus have testified for the defense in more than a dozen criminal cases, most of them death-penalty appeals. Together, they have published a series of groundbreaking studies on murderers and delinquents, painstakingly outlining the medical and psychiatric histories of the very violent; one of their studies has been cited twice in United States Supreme Court opinions. Of the two, Pincus is more conservative. He doesn't have doubts about evil the way Lewis

does, and sharply disagrees with her on some of the implications of their work. On the core conclusions, however, they are in agreement. They believe that the most vicious criminals are, overwhelmingly, people with some combination of abusive childhoods, brain injuries, and psychotic symptoms (in particular, paranoia), and that while each of these problems individually has no connection to criminality (most people who have been abused or have brain injuries or psychotic symptoms never end up harming anyone else), somehow these factors together create such terrifying synergy as to impede these individuals' ability to play by the rules of society.

Trying to determine the causes of human behavior is, of course, a notoriously tricky process. Lewis and Pincus haven't done the kind of huge, population-wide studies that could definitively answer just how predictive of criminality these factors are. Their findings are, however, sufficiently tantalizing that their ideas have steadily gained ground in recent years. Other researchers have now done some larger studies supporting their ideas. Meanwhile, a wave of new findings in the fields of experimental psychiatry and neurology has begun to explain why it is that brain dysfunction and child abuse can have such dire effects. The virtue of this theory is that it sidesteps all the topics that so cripple contemporary discussions of violence-genetics, biological determinism, and, of course, race. In a sense, it's a return to the old liberal idea that environment counts, and that it is possible to do something significant about crime by changing the material conditions of people's lives. Only, this time the maddening imprecision of the old idea (what, exactly, was it about bad housing, say, that supposedly led to violent crime?) has been left behind. Lewis and Pincus and other neurologists and psychiatrists working in the field of criminal behavior think they are beginning to understand what it is that helps to turn some people into violent criminals-right down to which functions of the brain are damaged by abuse and injury. That's what Lewis means when she says she doesn't think that people are intrinsically evil. She thinks that some criminals simply suffer from a dysfunction of the brain, the way cardiac patients suffer from a dysfunction of the heart, and this is the central and in some ways disquieting thing about her. When she talks about criminals as victims, she doesn't use the word in the standard liberal metaphorical sense. She means it literally.

Lewis works out of a tiny set of windowless offices on the twenty- first floor of the new wing of Bellevue Hospital, in Manhattan's East Twenties. The offices are decorated in institutional colors-gray carpeting and bright-orange trim-and since they're next to the children's psychiatric ward you can sometimes hear children crying out. Lewis's desk is stacked high with boxes of medical and court records from cases she has worked on, and also with dozens of videotapes of interviews with murderers which she has conducted over the years. She talks about some of her old cases-especially some of her death-row patients-as if they had just happened, going over and over details, sometimes worrying about whether she made the absolutely correct diagnosis. The fact that everyone else has long since given up on these people seems to be just what continues to attract her. Years ago, when she was in college, Lewis found herself sitting next to the Harvard theologian Paul Tillich on the train from New York to Boston. "When you read about witches being burned at the stake," Tillich asked her, in the midst of a long and wide-

ranging conversation, "do you identify with the witch or with the people looking on?" Tillich said he himself identified with the crowd. Not Lewis. She identified with the witch.

In her offices, Lewis has tapes of her interviews with Shawcross, the serial killer, and also tapes of Shawcross being interviewed by Park Elliott Dietz, the psychiatrist who testified for the prosecution in that case. Dietz is calm, in control, and has a slightly bored air, as if he had heard everything before. By contrast, Lewis, in her interviews, has a kind of innocence about her. She seems completely caught up in what is happening, and at one point, when Shawcross makes some particularly outrageous comment on what he did to one of the prostitutes he murdered, she looks back at the camera wide-eyed, as if to say "Wow!" When Dietz was on the stand, his notes were beside him in one of those rolling evidence carts, where everything is labelled and items are distinguished by color-coded dividers, so that he had the entire case at his fingertips. When Lewis testified, she kept a big stack of untidy notes on her lap and fussed through them after she was asked a question. She is like that in everyday life as well-a little distracted and spacey, wrapped up in the task at hand. It makes her so approachable and so unthreatening that it's no wonder she gets hardened criminals to tell her their secrets. It's another way of identifying with the witch. Once, while talking with Bundy, Lewis looked up after several hours and found that she had been so engrossed in their conversation that she hadn't noticed that everyone outside the soundproof glass of the interview booth-the guard, the prison officials at their desks-had left for lunch. She and Bundy were utterly alone. Terrified, Lewis stayed glued to her seat, her eyes never leaving his. "I didn't bat an eyelash," she recalls. Another time, after Lewis had interviewed a murderer in a Tennessee prison, she returned to her hotel room to find out that there had been a riot in the prison while she was there.

3.

The human brain comprises, in the simplest terms, four interrelated regions, stacked up in ascending order of complexity. At the bottom is the brain stem, which governs the most basic and primitive functions-breathing, blood pressure, and body temperature. Above that is the diencephalon, the seat of sleep and appetite. Then comes the limbic region, the seat of sexual behavior and instinctual emotions. And on top, covering the entire outside of the brain in a thick carpet of gray matter, is the cortex, the seat of both concrete and abstract thought. It is the function of the cortex-and, in particular, those parts of the cortex beneath the forehead, known as the frontal lobes-to modify the impulses that surge up from within the brain, to provide judgment, to organize behavior and decision-making, to learn and adhere to rules of everyday life. It is the dominance of the cortex and the frontal lobes, in other words, that is responsible for making us human; and the central argument of the school to which Lewis and Pincus belong is that what largely distinguishes many violent criminals from the rest of us is that something has happened inside their brains to throw the functioning of the cortex and the frontal lobes out of whack. "We are a highly socialized animal. We can sit in theatres with strangers and not fight with each other," Stuart Yudofsky, the chairman of psychiatry at Baylor College of Medicine, in Houston, told me. "Many other mammals could never crowd that closely together. Our cortex helps us figure out when we are and are not in danger. Our memory tells us what we should be frightened of and angry with

and what we shouldn't. But if there are problems there-if it's impaired-one can understand how that would lead to confusion, to problems with disinhibition, to violence." One of the most important things that Lewis and Pincus have to do, then, when they evaluate a murderer is check for signs of frontal-lobe impairment. This, the neurological exam, is Pincus's task.

Pincus begins by taking a medical history: he asks about car accidents and falls from trees and sports injuries and physical abuse and problems at birth and any blows to the head of a kind that might have caused damage to the frontal lobes. He asks about headaches, tests for reflexes and sensorimotor functions, and compares people's right and left sides and observes gait. "I measure the head circumference-if it's more than two standard deviations below the normal brain circumference, there may be some degree of mental retardation, and, if it's more than two standard deviations above, there may be hydrocephalus," Pincus told me. "I also check gross motor coördination. I ask people to spread their fingers and hold their hands apart and look for choreiform movements-discontinuous little jerky movements of the fingers and arms." We were in Pincus's cluttered office at Georgetown University Medical Center, in Washington, D.C., and Pincus, properly professorial in a gray Glen- plaid suit, held out his hand to demonstrate. "Then I ask them to skip, to hop," he went on, and he hopped up and down in a small space on the floor between papers and books.

Pincus stands just over six feet, has the long-limbed grace of an athlete, and plays the part of neurologist to perfection: calm, in command, with a distinguished sprinkle of white hair. At the same time, he has a look of mischief in his eyes, a streak of irreverence that allows him to jump up and down in his office before a total stranger. It's an odd combination, like Walter Matthau playing Sigmund Freud.

"Then I check for mixed dominance, to see if the person is, say, right-eyed, left-footed," he said. "If he is, it might mean that his central nervous system hasn't differentiated the way it should." He was sitting back down now. "No one of these by itself means he is damaged. But they can tell us something in aggregate."

At this point, Pincus held up a finger forty-five degrees to my left and moved it slowly to the right. "Now we're checking for frontal functions," he said. "A person should be able to look at the examiner's finger and follow it smoothly with his eyes. If he can only follow it jerkily, the frontal eye fields are not working properly. Then there's upward gaze." He asked me to direct my eyes to the ceiling. "The eye should go up five millimetres and a person should also be able to direct his gaze laterally and maintain it for twenty seconds. If he can't, that's motor impersistence." Ideally, Pincus will attempt to amplify his results with neuropsychological testing, an EEG (an electroencephalogram, which measures electrical patterns in the brain), and an MRI scan (that's magnetic resonance imaging), to see if he can spot scarring or lesions in any of the frontal regions which might contribute to impairment.

Pincus is also interested in measuring judgment. But since there is no objective standard for judgment, he tries to pick up evidence of an inability to cope with complexity, a lack of connection between experience and decision-making which is characteristic of cortical dysfunction. Now he walked behind me, reached over the

top of my head, and tapped the bridge of my nose in a steady rhythm. I blinked once, then stopped. That, he told me, was normal.

"When you tap somebody on the bridge of the nose, it's reasonable for a person to blink a couple of times, because there is a threat from the outside," Pincus said. "When it's clear there is no threat, the subject should be able to accommodate that. But, if the subject blinks more than three times, that's 'insufficiency of suppression,' which may reflect frontal-lobe dysfunction. The inability to accommodate means you can't adapt to a new situation. There's a certain rigidity there."

Arthur Shawcross, who had a cyst pressing on one temporal lobe and scarring in both frontal lobes (probably from, among other things, being hit on the head with a sledgehammer and with a discus, and falling on his head from the top of a forty-foot ladder), used to walk in absolutely straight lines, splashing through puddles instead of walking around them, and he would tear his pants on a barbed-wire fence instead of using a gate a few feet away. That's the kind of behavior Pincus tries to correlate with abnormalities on the neurological examination. "In the Wisconsin Card Sorting Test, the psychologist shows the subject four playing cards- three red ones, one black one- and asks which doesn't fit," Pincus said. "Then he shows the subject, say, the four of diamonds, the four of clubs, the four of hearts, and the three of diamonds. Somebody with frontal-lobe damage who correctly picked out the black one the first time-say, the four of clubs- is going to pick the four of clubs the second time. But the rules have changed. It's now a three we're after. We're going by numbers now, not color. It's that kind of change that people with frontal-lobe damage can't make. They can't change the rules. They get stuck in a pattern. They keep using rules that are demonstrably wrong. Then there's the word-fluency test. I ask them to name in one minute as many different words as they can think of which begin with the letter 'f.' Normal is fourteen, plus or minus five. Anyone who names fewer than nine is abnormal."

This is not an intelligence test. People with frontal-lobe damage might do just as well as anyone else if they were asked, say, to list the products they might buy in a supermarket. "Under those rules, most people can think of at least sixteen products in a minute and rattle them off," Pincus said. But that's a structured test, involving familiar objects, and it's a test with rules. The thing that people with frontal-lobe damage can't do is cope with situations where there are no rules, where they have to improvise, where they need to make unfamiliar associations. "Very often, they get stuck on one word- they'll say 'four,' 'fourteen,' 'forty-four,' " Pincus said. "They'll use the same word again and again-'farm' and then 'farming.' Or, as one fellow in a prison once said to me, 'fuck,' 'fucker,' 'fucking.' They don't have the ability to come up with something else."

What's at stake, fundamentally, with frontal-lobe damage is the question of inhibition. A normal person is able to ignore the tapping after one or two taps, the same way he can ignore being jostled in a crowded bar. A normal person can screen out and dismiss irrelevant aspects of the environment. But if you can't ignore the tapping, if you can't screen out every environmental annoyance and stimulus, then you probably can't ignore being jostled in a bar, either. It's living life with a hair trigger.

A recent study of two hundred and seventy-nine veterans who suffered penetrating head injuries in

Vietnam showed that those with frontal-lobe damage were anywhere from two to six times as violent and aggressive as veterans who had not suffered such injuries. This kind of aggression is what is known as neurological, or organic, rage. Unlike normal anger, it's not calibrated by the magnitude of the original insult. It's explosive and uncontrollable, the anger of someone who no longer has the mental equipment to moderate primal feelings of fear and aggression.

"There is a reactivity to it, in which a modest amount of stimulation results in a severe overreaction," Stuart Yudofsky told me. "Notice that reactivity implies that, for the most part, this behavior is not premeditated. The person is rarely violent and frightening all the time. There are often brief episodes of violence punctuating stretches when the person does not behave violently at all. There is also not any gain associated with organic violence. The person isn't using the violence to manipulate someone else or get something for himself. The act of violence does just the opposite. It is usually something that causes loss for the individual. He feels that it is out of his control and unlike himself. He doesn't blame other people for it. He often says, 'I hate myself for acting this way.' The first person with organic aggression I ever treated was a man who had been inflating a truck tire when the tire literally exploded and the rim was driven into his prefrontal cortex. He became extraordinarily aggressive. It was totally uncharacteristic: he had been a religious person with strong values. But now he would not only be physically violent-he would curse. When he came to our unit, a nurse offered him some orange juice. He was calm at that moment. But then he realized that the orange juice was warm, and in one quick motion he threw it back at her, knocking her glasses off and injuring her cornea. When we asked him why, he said, 'The orange juice was warm.' But he also said, 'I don't know what got into me.' It wasn't premeditated. It was something that accelerated quickly. He went from zero to a hundred in a millisecond." At that point, I asked Yudofsky an obvious question. Suppose you had a person from a difficult and disadvantaged background, who had spent much of his life on the football field, getting his head pounded by the helmets of opposing players. Suppose he was involved in a tempestuous on-again, off-again relationship with his ex-wife. Could a vicious attack on her and another man fall into the category of neurological rage? "You're not the first person to ask that question," Yudofsky replied dryly, declining to comment further.

Pincus has found that when he examines murderers neurological problems of this kind come up with a frequency far above what would be expected in the general population. For example, Lewis and Pincus published a study of fifteen death-row inmates randomly referred to them for examination; they were able to verify forty-eight separate incidents of significant head injury. Here are the injuries suffered by just the first three murderers examined:

I.

three years: beaten almost to death by father (multiple facial scars)

early childhood: thrown into sink onto head (palpable scar)

late adolescence: one episode of loss of consciousness while boxing

II.

childhood: beaten in head with two-by-fours by parents

childhood: fell into pit, unconscious for several hours

seventeen years: car accident with injury to right eye

eighteen years: fell from roof apparently because of a blackout

III.

six years: glass bottle deliberately dropped onto head

from tree (palpable scar on top of cranium)

eight years: hit by car

nine years: fell from platform, received head injury

fourteen years: jumped from moving car, hit head.

4.

Dorothy Lewis's task is harder than Jonathan Pincus's. He administers relatively straightforward tests of neurological function. But she is interested in the psychiatric picture, which means getting a murderer to talk about his family, his feelings and behavior, and, perhaps most important, his childhood. It is like a normal therapy session, except that Lewis doesn't have weeks in which to establish intimacy. She may have only a session or two. On one occasion, when she was visiting a notorious serial killer at San Quentin, she got lucky. "By chance, one of the lawyers had sent me some clippings from the newspaper, where I read that when he was caught he had been carrying some Wagner records," she told me. "For some reason, that stuck in my mind. The first time I went to see him, I started to approach him and he pointed at me and said, 'What's happening on June 18th?' And I said, 'That's the first night PBS is broadcasting "Der Ring des Nibelungen." ' You know, we'd studied Wagner at Ethical Culture. Granted, it was a lucky guess. But I showed him some respect, and you can imagine the rapport that engendered." Lewis says that even after talking for hours with someone guilty of horrendous crimes she never gets nightmares. She seems to be able to separate her everyday life from the task at hand-to draw a curtain between her home and her work. Once, I visited Lewis at her home: she and her husband, Mel, who is a professor of psychiatry at Yale, live in New Haven. The two dote on each other ("When I met Mel, I knew within a week that this was the man I wanted to marry," she says, flushing, "and I've never forgiven him, because it took him two weeks to ask me"), and as soon as I walked in they insisted on giving me a detailed tour of their house, picking up each memento, pointing out their children's works of art, and retelling the stories behind thirty years of anniversaries and birthdays: sometimes they told their stories in alternating sentences, and sometimes they told a story twice, first from Dorothy's perspective and then from Mel's. All in all, it was a full hour of domestic vaudeville. Then Dorothy sat on her couch, with her cat, Ptolemy, on her lap, and began to talk about serial killers, making a seamless transition from the sentimental to the unspeakable.

At the heart of Lewis's work with murderers is the search for evidence of childhood abuse. She looks for scars. She combs through old medical records for reports of suspicious injuries. She tries to talk to as many family members and friends as possible. She does all this because, of course, child abuse has devastating psychological consequences for children and the adults they become. But there is the more important reason-the one at the heart of the new theory of violence-which is that finding evidence of prolonged child abuse is a key to understanding criminal behavior because abuse also

appears to change the anatomy of the brain.

When a child is born, the parts of his brain that govern basic physiological processes-that keep him breathing and keep his heart beating-are fully intact. But a newborn can't walk, can't crawl, can't speak, can't reason or do much of anything besides sleep and eat, because the higher regions of his brain-the cortex, in particular-aren't developed yet. In the course of childhood, neurons in the cortex begin to organize themselves-to differentiate and make connections-and that maturation process is in large part responsive to what happens in the child's environment. Bruce Perry, a psychiatrist at Baylor College of Medicine, has done brain scans of children who have been severely neglected, and has found that their cortical and sub-cortical areas never developed properly, and that, as a result, those regions were roughly twenty or thirty per cent smaller than normal. This kind of underdevelopment doesn't affect just intelligence; it affects emotional health. "There are parts of the brain that are involved in attachment behavior-the connectedness of one individual to another-and in order for that to be expressed we have to have a certain nature of experience and have that experience at the right time," Perry told me. "If early in life you are not touched and held and given all the somatosensory stimuli that are associated with what we call love, that part of the brain is not organized in the same way."

According to Perry, the section of the brain involved in attachment-which he places just below the cortex, in the limbic region-would look different in someone abused or neglected. The wiring wouldn't be as dense or as complex. "Such a person is literally lacking some brain organization that would allow him to actually make strong connections to other human beings. Remember the orphans in Romania? They're a classic example of children who, by virtue of not being touched and held and having their eyes gazed into, didn't get the somatosensory bath. It doesn't matter how much you love them after age two-they've missed that critical window."

In a well-known paper in the field of child abuse, Mary Main, a psychologist at Berkeley, and Carol George, now at Mills College, studied a group of twenty disadvantaged toddlers, half of whom had been subjected to serious physical abuse and half of whom had not. Main and George were interested in how the toddlers responded to a classmate in distress. What they found was that almost all the nonabused children responded to a crying or otherwise distressed peer with concern or sadness or, alternatively, showed interest and made some attempt to provide comfort. But not one of the abused toddlers showed any concern. At the most, they showed interest. The majority of them either grew distressed and fearful themselves or lashed out with threats, anger, and physical assaults. Here is the study's description of Martin, an abused boy of two and a half, who-emotionally retarded in the way that Perry describes-seemed incapable of normal interaction with another human being:

> Martin . . . tried to take the hand of the crying other child, and when she resisted, he slapped her on the arm with his open hand. He then turned away from her to look at the ground and began vocalizing very strongly. "Cut it out! cut it out!," each time saying it a little faster and louder. He patted her, but when she became disturbed by his patting, he retreated "hissing at her and baring his teeth." He then began patting her on the back again, his patting became beating, and he continued beating her despite her screams.

Abuse also disrupts the brain's stress-response system, with profound results. When something traumatic happens-a car accident, a fight, a piece of shocking news-the brain responds by releasing several waves of hormones, the last of which is cortisol. The problem is that cortisol can be toxic. If someone is exposed to too much stress over too long a time, one theory is that all that cortisol begins to eat away at the organ of the brain known as the hippocampus, which serves as the brain's archivist: the hippocampus organizes and shapes memories and puts them in context, placing them in space and time and tying together visual memory with sound and smell. J. Douglas Bremner, a psychiatrist at Yale, has measured the damage that cortisol apparently does to the hippocampus by taking M.R.I. scans of the brains of adults who suffered severe sexual or physical abuse as children and comparing them with the brains of healthy adults. An M.R.I. scan is a picture of a cross-section of the brain-as if someone's head had been cut into thin slices like a tomato, and then each slice had been photographed-and in the horizontal section taken by Bremner the normal hippocampus is visible as two identical golf-ball-size organs, one on the left and one on the right, and each roughly even with the ear. In child-abuse survivors, Bremner found, the golf ball on the left is on average twelve per cent smaller than that of a healthy adult, and the theory is that it was shrunk by cortisol. Lewis says that she has examined murderers with dozens of scars on their backs, and that they have no idea how the scars got there. They can't remember their abuse, and if you look at Bremner's scans that memory loss begins to make sense: the archivist in their brain has been crippled.

Abuse also seems to affect the relationship between the left hemisphere of the brain, which plays a large role in logic and language, and the right hemisphere, which is thought to play a large role in creativity and depression. Martin Teicher, a professor of psychiatry at Harvard and McLean Hospital, recently gave EEGs to a hundred and fifteen children who had been admitted to a psychiatric facility, some of whom had a documented history of abuse. Not only did the rate of abnormal EEGs among the abused turn out to be twice that of the non-abused but all those abnormal brain scans turned out to be a result of problems on the left side of the brain. Something in the brain's stress response, Teicher theorized, was interfering with the balanced development of the brain's hemispheres.

Then Teicher did M.R.I.s of the brains of a subset of the abused children, looking at what is known as the corpus callosum. This is the fibre tract-the information superhighway-that connects the right and the left hemispheres. Sure enough, he found that parts of the corpus callosum of the abused kids were smaller than they were in the nonabused children. Teicher speculated that these abnormalities were a result of something wrong with the sheathing-the fatty substance, known as myelin, that coats the nerve cells of the corpus callosum. In a healthy person, the myelin helps the neuronal signals move quickly and efficiently. In the abused kids, the myelin seemed to have been eaten away, perhaps by the same excess cortisol that is thought to attack the hippocampus.

Taken together, these changes in brain hardware are more than simple handicaps. They are, in both subtle and fundamental ways, corrosive of self. Richard McNally, a professor of psychology at Harvard, has done memory studies with victims of serious trauma, and he has discovered that people with

post-traumatic-stress disorder, or P.T.S.D., show marked impairment in recalling specific autobiographical memories. A healthy trauma survivor, asked to name an instance when he exhibited kindness, says, "Last Friday, I helped a neighbor plow out his driveway." But a trauma survivor with P.T.S.D. can only say something like "I was kind to people when I was in high school." This is what seems to happen when your hippocampus shrinks: you can't find your memories. "The ability to solve problems in the here and now depends on one's ability to access specific autobiographical memories in which one has encountered similar problems in the past," McNally says. "It depends on knowing what worked and what didn't." With that ability impaired, abuse survivors cannot find coherence in their lives. Their sense of identity breaks down.

It is a very short walk from this kind of psychological picture to a diagnosis often associated with child abuse; namely, dissociative identity disorder, or D.I.D. Victims of child abuse are thought sometimes to dissociate, as a way of coping with their pain, of distancing themselves from their environment, of getting away from the danger they faced. It's the kind of disconnection that would make sense if a victim's memories were floating around without context and identification, his left and right hemispheres separated and unequal, and his sense of self fragmented and elusive. It's also a short walk from here to understanding how someone with such neurological problems could become dangerous. Teicher argues that in some of his EEG and M.R.I. analyses of the imbalance between the left and the right hemispheres he is describing the neurological basis for the polarization so often observed in psychiatrically disturbed patients-the mood swings, the sharply contrasting temperaments. Instead of having two integrated hemispheres, these patients have brains that are, in some sense, divided down the middle. "What you get is a kind of erratic-ness," says Frank Putnam, who heads the Unit on Developmental Traumatology at the National Institute of Mental Health, in Maryland. "These kinds of people can be very different in one situation compared with another. There is the sense that they don't have a larger moral compass."

Several years ago, Lewis and Pincus worked together on an appeal for David Wilson, a young black man on death row in Louisiana. Wilson had been found guilty of murdering a motorist, Stephen Stinson, who had stopped to help when the car Wilson was in ran out of gas on I-10 outside New Orleans; and the case looked, from all accounts, almost impossible to appeal. Wilson had Stinson's blood on his clothes, in his pocket he had a shotgun shell of the same type and gauge as the one found in the gun at the murder scene, and the prosecution had an eyewitness to the whole shooting. At the trial, Wilson denied that the bloody clothes were his, denied that he had shot Stinson, denied that a tape-recorded statement the prosecution had played for the jury was of his voice, and claimed he had slept through the entire inci-dent. It took the jury thirty-five minutes to convict him of first-degree murder and sixty-five minutes more, in the sentencing phase, to send him to the electric chair.

But when Lewis and Pincus examined him they became convinced that his story was actually much more complicated. In talking to Wilson's immediate family and other relatives, they gathered evidence that he had never been quite normal-that his personality had always seemed fractured and polarized. His

mother recalled episodes from a very early age during which he would become "glassy-eyed" and seem to be someone else entirely. "David had, like, two personalities," his mother said. At times, he would wander off and be found, later, miles away, she recalled. He would have violent episodes during which he would attack his siblings' property, and subsequently deny that he had done anything untoward at all. Friends would say that they had seen someone who looked just like Wilson at a bar, but weren't sure that it had been Wilson, because he'd been acting altogether differently. On other occasions, Wilson would find things in his pockets and have no idea how they got there. He sometimes said he was born in 1955 and at other times said 1948.

What he had, in other words, were the classic symptoms of dissociation, and when Lewis and Pincus dug deeper into his history they began to understand why. Wilson's medical records detailed a seemingly endless list of hospitalizations for accidents, falls, periods of unconsciousness, and "sunstroke," dating from the time Wilson was two through his teens-the paper trail of a childhood marked by extraordinary trauma and violence. In his report to Wilson's attorneys, based on his examination of Wilson, Pincus wrote that there had been "many guns" in the home and that Wilson was often shot at as a child. He was also beaten "with a bull whip, 2x4's, a hose, pipes, a tree approximately 4 inches in diameter, wire, a piece of steel and belt buckles . . . on his back, legs, abdomen and face," until "he couldn't walk." Sometimes, when the beatings became especially intense, Wilson would have to "escape from the house and live in the fields for as long as two weeks." A kindly relative would leave food surreptitiously for him. The report goes on:

> As a result of his beatings David was ashamed to go to school lest he be seen with welts. He would "lie down in the cold sand in a hut" near his home to recuperate for several days rather than go to school.

At the hearing, Lewis argued that when Wilson said he had no memory of shooting Stinson he was actually telling the truth. The years of abuse had hurt his ability to retrieve memories. Lewis also argued that Wilson had a violent side that he was, quite literally, unaware of; that he had the classic personality polarization of the severely abused who develop dissociative identity disorder. Lewis has videotapes of her sessions with Wilson: he is a handsome man with long fine black hair, sharply defined high cheekbones, and large, soft eyes. In the videotapes, he looks gentle. "During the hearing," Lewis recalls, "I was testifying, and I looked down at the defense table and David wasn't there. You know, David is a sweetie. He has a softness and a lovable quality. Instead, seated in his place there was this glowering kind of character, and I interrupted myself. I said, 'Excuse me, Your Honor, I just wanted to call to your attention that that is not David.' Everyone just looked." In the end, the judge vacated Wilson's death sentence.

Lewis talks a great deal about the Wilson case. It is one of the few instances in which she and Pincus succeeded in saving a defendant from the death penalty, and when she talks about what happened she almost always uses one of her favorite words-"poignant," spoken with a special emphasis, with a hesitation just before and just afterward. "In the course of evaluating someone, I always look for scars," Lewis told me. We were sitting in her Bellevue offices, watching the video of her examination of Wilson, and she was

remembering the poignant moment she first met him. "Since I was working with a male psychologist, I said to him, 'Would you be good enough to go into the bathroom and look at David's back?' So he did that, and then he came back out and said, 'Dorothy! You must come and see this.' David had scars all over his back and chest. Burn marks. Beatings. I've seen a lot. But that was really grotesque."

5.

Abuse, in and of itself, does not necessarily result in violence, any more than neurological impairment or psychosis does. Lewis and Pincus argue, however, that if you mix these conditions together they become dangerous, that they have a kind of pathological synergy, that, like the ingredients of a bomb, they are troublesome individually but explosive in combination.

Several years ago, Lewis and some colleagues did a followup study of ninety-five male juveniles she and Pincus had first worked with in the late nineteen-seventies, in Connecticut. She broke the subjects into several groups: Group 1 consisted of those who did not have psychiatric or neurological vulnerabilities or an abusive childhood; Group 2 consisted of those with vulnerabilities but no abuse at home; Group 3 consisted of those with abuse but no vulnerabilities; yet another group consisted of those with abuse and extensive vulnerabilities. Seven years later, as adults, those in Group 1 had been arrested for an average of just over two criminal offenses, none of which were violent, so the result was essentially no jail time. Group 2, the psychiatrically or neurologically impaired kids, had been convicted of an average of almost ten offenses, two of which were violent, the result being just under a year of jail time. Group 3, the abused kids, had 11.9 offenses, 1.9 of them violent, the result being five hundred and sixty-two days in jail. But the group of children who had the most vulnerabilities and abuse were in another league entirely. In the intervening seven years, they had been arrested for, on average, 16.8 crimes, 5.4 of which were violent, the result being a thousand two hundred and fourteen days in prison.

In another study on this topic, a University of Southern California psychologist named Adrian Raine looked at four thousand two hundred and sixty-nine male children born and living in Denmark, and classified them according to two variables. The first was whether there were complications at birth-which correlates, loosely, with neurological impairment. The second was whether the child had been rejected by the mother (whether the child was unplanned, unwanted, and so forth)-which correlates, loosely, with abuse and neglect. Looking back eighteen years later, Raine found that those children who had not been rejected and had had no birth complications had roughly the same chance of becoming criminally violent as those with only one of the risk factors-around three per cent. For the children with both complications and rejection, however, the risk of violence tripled: in fact, the children with both problems accounted for eighteen per cent of all the violent crimes, even though they made up only 4.5 per cent of the group.

There is in these statistics a powerful and practical suggestion for how to prevent crime. In the current ideological climate, liberals argue that fighting crime requires fighting poverty, and conservatives argue that fighting crime requires ever more police and prisons; both of these things may be true, but both are also daunting. The studies suggest that there may be instances in which more modest interventions can bring large dividends. Criminal behavior that is

associated with specific neurological problems is behavior that can, potentially, be diagnosed and treated like any other illness. Already, for example, researchers have found drugs that can mimic the cortical function of moderating violent behavior. The work is preliminary but promising. "We are on the cusp of a revolution in treating these conditions," Stuart Yudofsky told me. "We can use anticonvulsants, antidepressants, anti-hypertensive medications. There are medications out there that are F.D.A.-approved for other conditions which have profound effects on mitigating aggression." At the prevention end, as well, there's a strong argument for establishing aggressive child-abuse-prevention programs. Since 1992, for example, the National Committee to Prevent Child Abuse, a not-for- profit advocacy group based in Chicago, has been successfully promoting a program called Healthy Families America, which, working with hospitals, prenatal clinics, and physicians, identifies mothers in stressful and potentially abusive situations either before they give birth or immediately afterward, and then provides them with weekly home visits, counselling, and support for as long as five years. The main thing holding back nationwide adoption of programs like this is money: Healthy Families America costs up to two thousand dollars per family per year, but if we view it as a crime-prevention measure that's not a large sum.

These ideas, however, force a change in the way we think about criminality. Advances in the understanding of human behavior are necessarily corrosive of the idea of free will. That much is to be expected, and it is why courts have competency hearings, and legal scholars endlessly debate the definition and the use of the insanity defense. But the new research takes us one step further. If the patient of Yudofsky's who lashed out at his nurse because his orange juice was warm had, in the process, accidentally killed her, could we really hold him criminally responsible? Yudofsky says that that scenario is no different from one involving a man who is driving a car, has a heart attack, and kills a pedestrian. "Would you put him in jail?" he asks. Or consider Joseph Paul Franklin. By all accounts, he suffered through a brutal childhood on a par with that of David Wilson. What if he has a lesion on one of his frontal lobes, an atrophied hippocampus, a damaged and immature corpus callosum, a maldeveloped left hemisphere, a lack of synaptic complexity in the precortical limbic area, a profound left-right hemisphere split? What if in his remorselessness he was just the grownup version of the little boy Martin, whose ability to understand and relate to others was so retarded that he kept on hitting and hitting, even after the screams began? What if a history of abuse had turned a tendency toward schizophrenia-recall Franklin's colorful delusions-from a manageable impairment into the engine of murderousness? Such a person might still be sane, according to the strict legal definition. But that kind of medical diagnosis suggests, at the very least, that his ability to live by the rules of civilized society, and to understand and act on the distinctions between right and wrong, is quite different from that of someone who had a normal childhood and a normal brain.

What is implied by these questions is a far broader debate over competency and responsibility-an attempt to make medical considerations far more central to the administration of justice, so that we don't bring in doctors only when the accused seems really crazy but, rather, bring in

doctors all the time, to add their expertise to the determination of responsibility.

One of the state-of-the-art diagnostic tools in neurology and psychiatry is the pet scan, a computerized X-ray that tracks the movement and rate of the body's metabolism. When you sing, for instance, the neurons in the specific regions that govern singing will start to fire. Blood will flow toward those regions, and if you take a pet scan at that moment the specific areas responsible for singing will light up on the pet computer monitor. Bremner, at Yale, has done pet scans of Vietnam War veterans suffering from post-traumatic-stress disorder. As he scanned the vets, he showed them a set of slides of Vietnam battle scenes accompanied by an appropriate soundtrack of guns and helicopters. Then he did the same thing with vets who were not suffering from P.T.S.D. Bremner printed out the results of the comparison for me, and they are fascinating. The pictures are color- coded. Blue shows the parts of the brain that were being used identically in the two groups of veterans, and most of each picture is blue. A few parts are light blue or green, signifying that the P.T.S.D. vets were using those regions a little less than the healthy vets were. The key color, however, is white. White shows brain areas that the healthy vets were using as they watched the slide show and the unhealthy vets were hardly using at all; in Bremner's computer printout, there is a huge white blob in the front of every non-P.T.S.D. scan.

"That's the orbitofrontal region," Bremner told me. "It's responsible for the extinction of fear." The orbitofrontal region is the part of your brain that evaluates the primal feelings of fear and anxiety which come up from the brain's deeper recesses. It's the part that tells you that you're in a hospital watching a slide show of the Vietnam War, not in Vietnam living through the real thing. The vets with P.T.S.D. weren't using that part of their brain. That's why every time a truck backfires or they see a war picture in a magazine they are forced to relive their wartime experiences: they can't tell the difference.

It doesn't take much imagination to see that this technique might someday be used to evaluate criminals-to help decide whether to grant parole, for example, or to find out whether some kind of medical treatment might aid reëntry into normal society. We appear to be creating a brand-new criminal paradigm: the research suggests that instead of thinking about and categorizing criminals merely by their acts-murder, rape, armed robbery, and so on-we ought to categorize criminals also according to their disabilities, so that a murderer with profound neurological damage and a history of vicious childhood abuse is thought of differently from a murderer with no brain damage and mild child abuse, who is, in turn, thought of differently from a murderer with no identifiable impairment at all. This is a more flexible view. It can be argued that it is a more sophisticated view. But even those engaged in such research-for example, Pincus-confess to discomfort at its implications, since something is undoubtedly lost in the translation. The moral force of the old standard, after all, lay in its inflexibility. Murder was murder, and the allowances made for aggravated circumstances were kept to a minimum. Is a moral standard still a moral standard when it is freighted with exceptions and exemptions and physiological equivocation?

When Lewis went to see Bundy, in Florida, on the day before his execution, she asked him why he had invited her-out of a great many people lining up

outside his door-to see him. He answered, "Because everyone else wants to know what I did. You are the only one who wants to know why I did it." It's impossible to be sure what the supremely manipulative Bundy meant by this: whether he genuinely appreciated Lewis, or whether he simply regarded her as his last conquest. What is clear is that, over the four or five times they met in Bundy's last years, the two reached a curious understanding: he was now part of her scientific enterprise.

"I wasn't writing a book about him," Lewis recalls. "That he knew. The context in which he had first seen me was a scientific study, and this convinced him that I wasn't using him. In the last meeting, as I recall, he said that he wanted any material that I found out about him to be used to understand what causes people to be violent. We even discussed whether he would allow his brain to be studied. It was not an easy thing to talk about with him, let me tell you." At times, Lewis says, Bundy was manic, "high as a kite." On one occasion, he detailed to her just how he had killed a woman, and, on another occasion, he stared at her and stated flatly, "The man sitting across from you did not commit any murders." But she says that at the end she sensed a certain breakthrough. "The day before he was executed, he asked me to turn off the tape recorder. He said he wanted to tell me things that he didn't want recorded, so I didn't record them. It was very confidential." To this day, Lewis has never told anyone what Bundy said. There is something almost admirable about this. But there is also something strange about extending the physician-patient privilege to a killer like Bundy-about turning the murderer so completely into a patient. It is not that the premise is false, that murderers can't also be patients. It's just that once you make that leap-once you turn the criminal into an object of medical scrutiny-the crime itself inevitably becomes pushed aside and normalized. The difference between a crime of evil and a crime of illness is the difference between a sin and a symptom. And symptoms don't intrude in the relationship between the murderer and the rest of us: they don't force us to stop and observe the distinctions between right and wrong, between the speakable and the unspeakable, the way sins do. It was at the end of that final conversation that Bundy reached down and kissed Lewis on the cheek. But that was not all that happened. Lewis then reached up, put her arms around him, and kissed him back.