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The Man Who Mistook His Wife for a Deer

By CHIP BROWN

The Strange and the Beautiful

t takes a while to figure out why Dr. Mark Mahowald's grainy sleep-lab videos are so spooky. One immediate reason is the phenomena on the footage -- a class of disorders called "parasomnias," which are defined as unwanted and involuntary behaviors during sleep and are by definition occult, because they appear when most people are unable to witness them. But even the scientists who stay up late by profession never quite get used to what they see. Mahowald, a neurology professor at the University of Minnesota and director of the Minnesota Regional Sleep Disorders Center, likes to say to his students, "We study the strange and the beautiful."

To judge from the tapes, that's the understatement of the semester.

Here's a bearded elder man bolting up at 4:30 a.m. He clutches his left leg, waves his right arm and brays at the top of his lungs -- "HO! HO! HO!" -- dementedly jolly cries that also evoke something bestial and wounded. In the morning he remembers nothing of this "confusional arousal" triggered by obstructive sleep apnea, a condition in which a constriction of the throat causes you to gasp for breath. Inevitably the man came to be known at the lab as Santa Claus. Mahowald said that when the patient saw himself on tape he was "horrified" but finally understood why he'd been kicked out of so many hotels.

Here's a fat, frizzy-haired woman in bed grinding her teeth. The sound is like a door hinge in a haunted house. Her left hand fumbles for a snack; she starts to eat, with no conscious control over her actions.

Here are people in the midst of "partial" arousals who spring from bed and rip off the electrodes glued to their heads, removing patches of their scalps as well; people who box the air, flail at imaginary snakes, twitch, jerk, groan, rub their genitals, bloody their hands on nightstands or rock and tremble like bobble-head dolls. People who by day are wry, levelheaded paragons of mental health but who at night find themselves locked in life-and-death struggles with intruders.

Mel Abel, for instance. He's a droll, mild-mannered man who grew up on a farm in Minnesota, owned a

tavern for a while and sold real estate. A taped snippet of one of his nights in the sleep lab is part of a parasomnia training video. At 4:24 a.m., Mel begins sleep-talking: "Quit using the goddamn bowl for banging like that -- quit it now! Get the hell out of here! Go on! That's about four times this morning that I have told you. I don't know if you're that deaf or that dumb, which . . . goddamn continuously. . . . What the hell are you looking for, a walleye?"

For sure, some of these spectacles are hilarious. It's hard not to laugh when a sane Midwesterner who doesn't have a cat sits on the edge of his bed asleep, saying, "Here, kitty, kitty, kitty." But it's not so funny if you are one of the automatons eating raw bacon and cigarettes. Some parasomnia cases have the parameters of Greek tragedy. Mel Abel's eyes brim with tears when he tells how criminally close he came to harming his wife, Harriet. He was struggling with a deer whose neck he was trying to snap when he discovered he was actually home in bed with his hands on Harriet's head and chin. Harriet woke him up, hollering, "Mel, what in the world are you trying to do?"

These after-hours manifestations of the strange and beautiful undermine all our noonday notions of who we are and what we can command. Suddenly it's easy to understand what spawned the lore of demons and succubi, those "old hags" from whom the word nightmare is derived, and the countless other psychoreligious confabulations dreamed up over the centuries since Plato declared that "in all of us, even good men, there is a lawless wild-beast nature which peers out in sleep."

Our ideas about ourselves are constantly evolving, but the pace of the revisions lately has been accelerated by phenomenal advances in both neuroscience and sleep medicine, which is one of the youngest sciences. "We are at the dawn of the golden age of sleep research," says David Dinges, chief of the division of sleep and chronobiology in the department of psychiatry at the University of Pennsylvania. "The field is moving so fast scientifically that few researchers can even take the time to write a book."

New data about parasomnias are emerging in the context of a "folk psychology" that has been shaped by a century of Freudian opinion. If we now conceive of demons and their ilk as repressed conflicts and developmental traumas and accept as axiomatic that the self is not limited to what we are strictly conscious of even when fully awake, we also suppose our behaviors are pregnant with hidden meanings and that our psyches speak in codes only $200-an-hour masterminds can crack. We suppose hidden truths are waiting to surface when the guard of waking is dropped.

Parasomnias are interesting for the ways they undercut these contentions -- for what they imply about the scope and nature of the self. They point toward a novel model of the mind that envisions waking, sleeping and dreaming as distinct neurodynamic states that lie along a continuum and are separated by imperfect, sometimes porous boundaries. States can get "dissociated" or mixed together in the way script from one program can hang up in another when you're shifting between the windows of a buggy computer. If this "state dissociation" model proposes a brave new world shorn of some of our most cozy truisms, it also raises those questions that inevitably trail after radical revisions: that's to say, who are we now under these strange new terms, and how should we live?

Drama Queens

t's probably safe to say that as long as people have been sleeping they have been having problems sleeping, but the consensus now is that things have never been worse. Electric lights, night shifts, double espressos, after-dark distractions, even the archetype of the macho workaholic have combined to murder sleep. Millions of Americans have what is called "sleep debt," which preliminary studies indicate may lead to heart disease,

stroke, diabetes and depression, among other troubles.

For about 40 million Americans, sleeping woes can be linked to at least one of the 84 official sleep disorders, the most common of which are chronic insomnia and obstructive sleep apnea. People with sleep apnea can wake up hundreds of times a night and not know it. On the other hand, parasomnias, which account for about 10 percent of sleep disorders, are the drama queens of the night, known if not to the afflicted players (who are by definition asleep) then certainly to their boggled bed partners. They are generally divided into two categories that reflect the now canonical states of the sleeping brain -- those that occur in Rapid Eye Movement (REM) sleep and those that arise from non-REM (NREM) sleep.

The most common NREM parasomnias, sleepwalking and sleep terrors, are often triggered by so-called partial or confusional arousals from the deepest stages of sleep. Some stimulus like a loud noise or a full bladder half-wakes you up, and you have enough awareness to perform fairly complex motor behaviors -- enough to drive a car, say, or turn on a microwave -- but not enough to be considered the agent of your actions by traditional standards. The amnesia characteristic of NREM arousals seems almost incredible in the case of sleep terrors, where people will often bolt up bug-eyed, screaming like actresses in straight-to-video horror movies. It's no wonder that the prevailing opinion until recently was that these disorders signaled some seriously loose screws.

"We were taught in medical school in the 60's that sleepwalking and sleep terrors in adults were associated with significant underlying psychiatric disease," Mahowald told me. "I actually taught that because that's what the book said. Then we saw a lot of adults with sleepwalking and sleep terrors who were perfectly well wired neurologically and psychiatrically. People just didn't want to believe that a perfectly normal adult could have sleep terrors and sleepwalking."

Sleepwalking and sleep terrors are so common among children between the ages of 4 and 12 that they're considered normal developmental behavior. It's one measure of how culture is imposed on us that what's normal in children is problematic in adults. Often sleepwalkers, or people with some of the other disorders like sleep-talking, sleep-groaning or periodic limb movement disorder, don't seek treatment until they're planning to head off to college or join the Army and are faced with the prospect of exhibiting their embarrassing night life in a dorm or a barracks.

The first window for REM parasomnias opens with the initial phase of sleep associated with vivid dreams. Rapid Eye Movement sleep could just as easily be named after one of its other features, muscle paralysis, or atonia, which is what prevents you from sitting up in a dream to pet a cat you don't have. The presence of muscle tone is a key to REM behavior disorder, perhaps the most significant of all the parasomnias.

The mystery of the brain's nightly oscillations between REM and NREM is part of the larger enigma of sleep itself. No one really knows why we have to throw ourselves onto a pallet every evening, or why the average person spends about 25 years of his or her life sleeping (or trying to sleep). All that's certain is that sleep is essential for many species of birds and for all mammals, and that evolution seems to have taken pains to keep it in the picture. (Dolphins, for example, would drown if they couldn't stay awake to regulate their respiration, but their brains have evolved the ingenious ability to sleep one hemisphere at a time.)

Much of what is known about parasomnias has been gathered in sleep clinics, the first of which was established only in 1970 at Stanford University. There are now hundreds of clinics in the United States. When an especially baffling parasomnia case appears, doctors sometimes refer patients to top centers like the Minnesota Regional Sleep Disorders Center, where Mark Mahowald and his colleague Carlos Schenck have

been mapping this esoteric patch of the mind-body problem for more than 20 years. Late last summer Mahowald invited me to visit the Minnesota clinic, and Schenck, a psychiatrist on staff there, offered to introduce me to some of his patients -- a group of Midwesterners who were more intimately acquainted with the strange and beautiful than they'd ever bargained for.

"Nine Years of Hell"

n 1979, after 33 years of marriage, Rowena Pope thought she knew her husband, Cal, as well as any soul mate could. They lived in a house in a northern suburb of Minneapolis. They had raised six daughters and a son. They had started out "poor as Job's turkey," as Rowena put it, but had worked hard, Cal as a customs broker, and Rowena in jobs at a local newspaper, a law office and the municipal court. She could finish her husband's sentences and start a lot of them, too, because he was a man of few words -- dutiful, undemonstrative, slow to anger, gentle.

"He's part of that generation of men who came home from World War II, took off the uniform and never said a word about it to anybody, and anybody who did say a word was a blowhard," Rowena told me when I visited them at their house.

One spring night in 1979, asleep in bed, she woke up to find herself under attack. It was Cal, of all people. "He was violently kicking and pummeling me and carrying on," she recalled. "His feet were just like hammers -- bang! bang! bang! It lasted about a minute but it seemed like forever. He was asleep. I asked him when he woke up, 'What in the world is happening?' And he said, 'I don't know.'"

She was angry and frightened, but mostly puzzled.

When he came home from work that night, he said he finally figured out that he had been having a dream and in it, an intruder had come into their bedroom and he was trying to drive him out.

"That was the beginning of nine years of hell," Rowena said.

Night after night, Cal would kick and shout in his sleep. The episodes began to take a toll on the house, not to mention on Cal's body. He knocked pictures off the wall. A head butt left a crack in a walnut dresser that had belonged to Rowena's mother. He threw a punch that put a crater in the plaster bedside wall. He cracked a toe, and bloodied his knuckles more times than anybody could count.

The episodes also began to take an emotional toll on Rowena. "There was never a time when we were free of it," she said. "We turned down invitations to stay overnight at friends' houses. Cal never wanted to travel. At night he would be shouting and cavorting and carrying on. I finally said, 'You have to sleep in another room.' I talked to our family doctor, and he said, 'Oh, it might be something he ate.' People didn't know anything about this."

She thought maybe Cal had post-traumatic stress from the horrors of his experience in the war. What was most exasperating was that Cal didn't think he really had a problem. When he was dreaming he lacked any awareness of being in a dream, and when he would wake up, he had little if any memory of what had happened. Because his sleep was chopped up with so many arousals, he was often exhausted during the day and would come home from work and collapse.

"I just figured I was working too hard," he said.

"Sometimes he would shout out in his sleep 'No! No! No!'" Rowena said. "I had never heard him sound so anguished before in my life. It was heart-rending. He's never been in a fight as far as I'm aware of. He was never jealous."

They took all the framed pictures out of the room. They got a bed that was low to the floor and under the carpet laid a double-thick pad to cushion the falls Cal might take.

A feeling of estrangement crept over their marriage. Cal eventually moved all his clothes and belongings into another room. Sleeping in separate beds was "abhorrent" to Rowena, but she felt there was no choice.

Then one afternoon she saw a report on the local TV news about a man who mistook his wife for a deer. It was Mel Abel. Rowena tried to persuade Cal to have an evaluation. He resisted, even though the behavior seemed to be getting worse. She recalled one incident in an account she wrote up:

"One afternoon while he was napping on the couch as I read a book, he played out a scene more awful than anything I had ever seen or heard. He rolled off the couch and hit the floor. Normally, a fall to the floor would have awakened him. But instead he began roaring like a wounded wild animal. I sat in my chair frozen with fear as I watched the unbelievable scene unfold. He roared, he crouched, he pounced and finally crawled into a space between the couch and the wall, as if in a den or lair. When I was able to speak I shouted to awaken him. He could not believe my description of what had just happened, even though he was surprised to find himself on the floor."

Rowena had finally had enough. She wrote to the Minnesota sleep center and in November 1988 got Cal an appointment with Dr. Schenck. The next month he spent two nights in the sleep lab. The diagnosis was indeed what Mel Abel's had been: REM behavior disorder.

"It was such a relief to get a diagnosis and treatment," Rowena said. "At the time they had only diagnosed 25 people."

Only two years earlier in the journal Sleep, Mahowald and Schenck had published what would come to be considered one of the seminal papers in the field, formally identifying REM behavior disorder (R.B.D.) as a new parasomnia. R.B.D. mainly affects men over 50 and is characterized clinically by changes in the nature and range of a patient's dreams, as well as by a spectacular loss of the muscle paralysis that prevents most people from acting their dreams out.

In a way, REM behavior disorder is the mirror image of narcolepsy, the well-known disorder that can cause people to nod out in the middle of a sentence. In narcolepsy, a feature of REM sleep (muscle atonia) intrudes into waking. In REM behavior disorder, a feature of waking (muscle tone) intrudes into REM sleep. A sedative, clonazepam, which works in ways nobody really understands, has been proved an effective treatment for REM behavior disorder. It doesn't restore the muscle paralysis but seems to calm the brain down enough to keep the dreamers in their beds.

What makes REM behavior disorder so theatrical is not just the dream enactment but also the change in the character of the dreams. They become more like pulp fiction, filled with intruders, obscenities, kicks and uppercuts. Here, you might think, is a psychologically rich parasomnia in which the sleeping mind betrays the unexpurgated feelings hidden behind the mask of civility.

Apparently not.

"The R.B.D. behaviors and their associated stereotypic dream changes are the most reflexive by-products of altered brain-stem activity," Schenck told me. "They are behavioral storms coming from the brain stem."

In Schenck and Mahowald's view, what argues for the finding that R.B.D. behavior has little if anything to do with psychodynamic factors are the famous experiments with cats that anticipated the discovery of REM behavior disorder in humans. Michel Jouvet and his colleagues in France in the 1960's made lesions in cat brain stems that prevented muscle atonia. When the cats went into REM sleep, they didn't lie immobilized in the dream world; they scrambled up, arched their backs and acted out all sorts of aggressive automatic behaviors.

"The categories of behavior seen in REM-behavior-disorder patients are the exact same categories seen in animals," Schenck said. "We see simple jerking and twitching, orientation responses, locomotion and violent behaviors. We don't see feeding, eating, grooming or sexual behavior. Basically, with REM behavior disorder your dream content gets very restricted. Everything is shunted along certain pathways. A lot of people say after treatment, 'I can have my regular dreams again!'"

One of Schenck and Mahowald's most remarkable findings was that in 65 percent of their male patients over 50 (without a neurological condition), the onset of REM behavior disorder proved to be a harbinger of Parkinson's disease. Some patients actually experienced changes in the content of their dreams months before they began acting them out. In those who developed Parkinson's, symptoms of the disease appeared within 13 years on average from the onset of R.B.D.

Schenck and Mahowald identified R.B.D., but they were not the first to describe the behavior, as Schenck learned in December 1996, when he flew to Madrid to give some talks to a Spanish neurological society. At dinner one night, two of his colleagues presented him with a gift, a copy of Miguel de Cervantes's epic novel "Don Quixote," published in 1605. A passage was marked on Page 364. Schenck, who speaks Spanish, began to smile as he read Cervantes's lines: "He was thrusting his sword in all directions, speaking out loud as if he were actually fighting a giant. And the strange thing was that he did not have his eyes open, because he was asleep and dreaming that he was battling the giant. . . . He had stabbed the wine skins so many times, believing that he was stabbing the giant, that the entire room was filled with wine." A classic case of R.B.D., described 381 years before the condition was recognized.

Cal Pope still thrashes in his sleep, but his medication has managed the behavior fairly well for 14 years now, and some good things have come back into his and Rowena's lives -- not everything, but Rowena prefers to count her blessings. After 56 years of marriage, she has the company of her husband again, not that wild beast that was peering out at her from sleep. They go to the movies once a week. Evenings at home they watch the news together, sometimes sharing a bowl of popcorn or ice cream, and then around 10, still a little wary of the night, they head off to separate rooms.

"Even the Mice Have Left"

ecause people have been devising theories about the meaning of dreams for centuries, convinced that dreams are messages from God or postcards from the unconscious or telepathic communiques from the great beyond, it's hard to imagine that a sleep disorder involving dreams could reveal so little about an individual's psyche. But this is what sleep scientists argue is the case. As Schenck noted, in both REM and NREM parasomnias, more than 90 percent of the wild stuff recorded in the sleep lab are "automatic behaviors related to neuronal activity and/or abnormal or confusional interactions with the immediate environment." In the more relaxed setting of the home, he says, there is a slight increase in what he termed "psychologically meaningful"

behaviors for people with NREM disorders like sleepwalking and sleep terrors and, to a lesser degree, sleep-related eating disorder. For those with REM behavior disorder, however, being at home makes virtually no difference.

"In the lab, what we see a little more of aren't really 'deep-seated' psychological behaviors dealing with neurosis," Schenck said. "They're more things like a mother searching for her baby and picking her baby up for fear the baby may not be safe."

Maureen Strehlow, a 57-year-old woman with dark brown eyes and hair, lives alone south of Minneapolis. It has been 10 years since she first walked into the Minnesota Regional Sleep Disorders Center. At that time, she had been divorced a few years; she was living with her three children, and she was at her wit's end.

She had discovered that she was powerless to stop eating in her sleep -- sleep, or whatever that twilight state was in which she would traverse the hall from the bed to the kitchen, usually with no recollection in the morning but aware enough at the time to rummage in the counter drawer for the stale licorice behind the coffee filters. The list of tactics that failed to thwart her behavior was long. She had tried to "prime" herself not to eat. She'd hung paper plates block-lettered with the word "EAT" with a bold slash through it. She had even hired one of her daughters at a few dollars a night to bed down in the hall outside Maureen's room on the theory that the teenager might be alert enough to intervene, or at least present an obstacle.

"You know how kids sleep," Maureen recalled. "A bulldozer could hit the house and they wouldn't wake up. The first night I stepped right over her."

Maureen got rid of the sweets she usually went for, but then she discovered one morning that she had opened a can of soup and picked out the mushrooms.

She was so tired in the morning she would hit the snooze alarm six times. What bothered her more than the fatigue and the lack of control was how she was ruining her figure. For a while, she had a helpful adversary in her youngest daughter, Suzanne.

"Five or six times Suzanne heard me get up in the night and came running upstairs from the basement. She would stand there with her hands on her hips and say, 'You're eating!' And I'd say, 'I'm not eating!' And she'd say: 'Duh! You are too!' Part of me was mad at her. And then in the morning, if I hadn't eaten, I'd be so grateful. Sometimes I was totally asleep; other times I had some awareness. I would say 75 percent of the time when I woke up in the morning I'd have no memory of getting up and eating. But then something might jog me and I'd remember."

She had been eating in her sleep since her late teens, finding clues like chocolate frosting on her pillow or cherry pits and porkchop bones in the sheets. "I thought I was the only person in the world doing this. I would wake up in the morning wondering, What did you do last night?"

In 1992, a friend was listening to a radio program that featured Carlos Schenck talking about people who eat in their sleep. There had been scattered case reports of nocturnal eating in the medical literature going back to the 1940's, but in 1991, again in the journal Sleep, Schenck and Mahowald described 19 cases of what they were formally introducing as sleep-related eating disorder (S.R.E.D.).

"My friend called me at home," Maureen recalled. "She said, 'This is you!' I called the center the next day."

Her condition was diagnosed as S.R.E.D., which is defined as compulsive eating occurring during partial arousals from NREM sleep. It often combines elements of an eating disorder, which is considered a psychiatric condition, with elements of a sleep disorder, which in Maureen's case researchers speculate is related to a deficiency of dopamine in her brain.

"No matter how it begins, either with stress or with another sleep disorder such as sleepwalking, sleep-related eating will usually become a nightly phenomenon," Schenck told me. "The one variable is the level of consciousness associated with the eating. Usually there is partial consciousness, but in about a quarter of our patients there can be complete unconsciousness, and in about 15 to 20 percent of cases, there is full wakefulness and subsequent recall, but no control over the eating."

Schenck prescribed Maureen a dopamine-enhancing medication and Tylenol 3, which contains codeine.

"When I first started taking the medications, I was running around the neighborhood singing Hallelujah!" Maureen recalled. "I felt so good about myself. I started exercising. I would call up guys and ask them out to dinner."

For three years her sleep-eating was well controlled by the prescriptions. But then what Schenck believes is an underlying condition emerged -- the sleep disorder known as restless legs syndrome, which is characterized by extremely painful crawling sensations in the legs.

When I visited in October, Maureen had recently had a relapse of sleep-eating, and her restless legs syndrome was acting up. "It's kind of depressing what I can do," she said, with a rueful laugh. "Last week I woke up with the worst taste in my mouth -- I had made a sandwich out of beef-bouillon cubes in my sleep. Who'd eat that? It's probably because there's nothing to eat in the house. Even the mice have left."

She showed me the route from her Victorian bed to her tan-tiled kitchen. The way was lined with potential obstacles -- her collection of large crocks, a rocking horse, a congress of teddy bears, breadboxes, ceramic pitchers -- all of which she always managed to negotiate in her sleep. When she was married, she said, she lived for a while with her mother-in-law, who was fighting cancer. She had loved her mother-in-law, and it still baffled and upset her that she could get up night after night to eat but never once think to check on the woman dying in the next room.

Cat Boy

he treatment Maureen Strehlow received for the pain in her legs and for her sleep-eating never addressed the possibility that psychological factors might be contributing to the disorders. No one would think to look for psychological factors in restless legs syndrome. But with sleep-eating, despite its automatic quality, the role of the psyche is harder to rule out. People recoil from a strictly neurological view of behavior basic to their identity -- behaviors related to food, sex, emotions, language and even dreams -- despite the obvious distortion of dreams in REM behavior disorder.

If there was an emotional or mental cause to Maureen's sleep-related eating, something other than the varying dopamine levels in her brain, she wasn't aware of it. The persistence of the behavior over the years had disabused her of the idea that she could do much to curb her trips to the kitchen; it was more important to her to break the pattern than to hunt for psychological origins under the iffy assumption that they existed. In any case, she didn't expect uncovering them would make any difference.

While skepticism about psychological causes ought to be routine, given how wantonly they've been applied to conditions where they had no business, sometimes there is no recourse but to invoke the psyche as the source of a parasomnia. One of the more startling episodes captured on tape at the Minnesota clinic is the nocturnal behavior of a 19-year-old known in the lab as Cat Boy. Fifty-three minutes after falling asleep, the teenager gets out of bed and begins crawling on the floor, growling, his hands folded into paws. He seizes a corner of the mattress with his teeth and shakes it. After six and a half minutes, perspiring heavily, he collapses and becomes "clinically unresponsive." When technicians ask him, he reports that he has been dreaming what he always dreams -- he is a large cat following a female zookeeper with a bucket of raw meat. Here's the strangest thing of all: this parasomnia is not technically a sleep disorder. Throughout the episode Cat Boy's EEG reports that his brain is "awake."

In his case, the diagnosis was of a psychiatric condition that happened to reveal itself under cover of darkness. Researchers at the Minnesota clinic estimate that about 7 percent of their parasomnia cases are actually nocturnal dissociative disorders. And these disorders consist of almost nothing but psychologically meaningful behavior.

"The behaviors reflect the psyche and past psychological experience usually in the context of physical, sexual, verbal abuse," Schenck noted. "Many of the observed and recorded behaviors, including vocalizations (moaning and words), are a combination of sexual and sexualized behaviors -- pelvic movements and thrusting -- and defensive behaviors and vocalizations, like 'No, no, no, don't do that!' or 'You're hurting me!' or 'Stop! Stop!' The EEG is awake but the person (usually female) perceives her dissociated memory of past abuse as an actual dream, as if she were asleep even though she is technically awake."

Even to a tutored eye, it is impossible to distinguish between behavior arising from a sleep disorder and behavior arising from a nocturnal dissociative disorder without a work-up in a sleep lab. For all their resemblance, parasomnias from the sleep state and parasomnias emerging from waking-state dissociations belong to different domains with different moral expectations. Cat Boy's parents were upset to learn his condition was a psychiatric disorder. The finding put the onus not on the body but on the mind -- on the waking state with its apparently defective self-control rather than on the sleep state where custom accepts that the self will vanish into the automatism of the brain.

The expectation that we ought to be able to control ourselves is essentially the issue at stake in criminal cases. Sleepwalking has been successfully used as a legal defense in some homicide cases but has failed in others. The main hurdle is that experts cannot determine the actual state of the brain after the fact, only whether a person has a propensity for partial arousals.

More mundanely, the premium on self-control heightens the guilt of people who exhibit sexual behavior while asleep. "Sleep sex" is not an officially classified disorder, but it has been the subject of a much-publicized recent study by researchers at Stanford University and has been observed since the inception of overnight sleep-lab studies. "I got a call about this from Playboy magazine years ago," Mahowald told me. "Technicians have seen it in the lab for years. It happens all the time. Most likely it's a specialized form of sleepwalking."

Dr. Christian Guilleminault and other scientists at Stanford's Sleep Disorders Clinic reported on 11 cases of "atypical sexual behavior" during sleep. The behaviors included "violent masturbation, sexual assaults and continuous (and loud) sexual vocalizations during sleep." Eight of the cases occurred in NREM sleep, three in REM. In four of the cases no psychopathology was diagnosed. In the others, a range of psychiatric ailments was found, from depression to obsessive-compulsive tendencies to anxiety, but the researchers concluded,

"We do not know to what extent the psychiatric disorders played a role in the observed behaviors."

Psyche vs. Neuron

he Minnesota Regional Sleep Disorders Center is housed on the eighth floor of the Hennepin County Medical Center in downtown Minneapolis. It has a wing for offices and consulting rooms and one for overnight sleep studies, of which the center does about 1,500 a year. On the afternoon when Mahowald was running through his parasomnia highlights reel, a crowd drifted in, Schenck among them. Mahowald and Schenck have been collaborating for 21 years. They have co-written 23 textbook chapters and 43 articles in peer-reviewed journals. They have made major discoveries and numerous contributions to the field of sleep medicine.

But there are subtle, psyche-versus-neuron differences in their views, some of which reflect differences in their training and background. Mahowald, 59, was born, bred and schooled in Minnesota. As a neurologist, he has a materialist's innate suspicion of nonmaterial concepts and explanations. Schenck, 52, is a psychiatrist who grew up on Manhattan's Upper West Side, where mentalist theories are as much a part of the landscape as alternate-side-of-the-street parking.

Even people who had seen the clips previously stared quietly as the train of strange behaviors flashed by. The tension in the office wanted breaking. "We rent these out on weekends," Mahowald said.

A new clip started. "Here's a sleep terror," he continued. "You can trigger a sleep terror de novo, from nothing -- just the sound of a doorbell or a buzzer from a six-volt battery -- which means it's not a climax of ongoing dreamlike mentation. See this kid -- he's paying attention to exogenous and endogenous information. It's not like a nightmare when you can remember why you are frightened. In nightmares you have an accelerated heart rate. With a sleep terror you have no anticipatory increase in the heart rate."

A man with REM behavior disorder appeared on the monitor fighting phantoms over his bed. A case of a person acting out a dream?

"Either he's acting out a dream, or possibly dreaming out an act. It could be that the brain makes up something to explain the movement created by motor-pattern generators in the brain stem."

Schenck piped up. "But isn't there still room for Freud?" he asked, using "Freud" as a synonym not for psychoanalytic doctrine but for the idea that what's on the mind can modify what's in the tissue. There was a deferential note in his voice, as if he knew the suggestion might irritate his senior colleague. "One of our R.B.D. patients after his divorce said he was always dreaming of an 800-pound gorilla chasing him around the house. How can you not consider a psychodynamic influence in a scenario like that, with the man's ex-wife thinly disguised as an 800-pound gorilla?"

Mahowald shrugged. Was he ceding the point? On the screen now a black Labrador retriever was snoozing on his side. The dog's legs began pedaling wildly, pawing the air. Was he inventing a dream to go with the mad scrabbling of his legs -- perhaps a hot-pursuit sequence involving a mailman?

"I don't know," Mahowald said with a happy little drop of arsenic in his voice, "but I suspect he's not resolving deep inner conflict."

Maybe It's a Gift

ot long ago in an Italian biology journal, Mahowald and Schenck proposed a "state dissociation" model of the brain. But recently Mahowald told me that he had reviewed a new book, "The Dream Drugstore," by Allan Hobson, a Harvard dream researcher, and that Hobson's model, developed over the last 25 years, was much better than his own. Hobson's so-called Activation Input Modulation theory tries to account for waking, sleeping and dreaming, as well as states like coma, by picturing the mind-brain as a cube. The three dimensions of Hobson's cube reflect the three key variables that determine a person's consciousness at any given moment. The first variable is the level of activation in the brain; coma, for example, would be at the low end; waking and vivid dreaming at the high end. The second variable is the predominant source of input -- in waking, for instance, the brain's attention is concentrated on the external environment, but in REM sleep the brain is mostly minding itself. The third and most complex variable is the brain's chemical microclimate, the fluctuating mix of the neuromodulators that can enhance or impede the brain's ability to analyze information.

"The AIM model says that the brain-mind is constantly changing states," Hobson said when I went up to Boston to talk to him. "There are canonical states like sleep and waking, which we know well and about which we have little or no choice. They are probably genetically determined and highly conserved by evolution and tremendously significant. But there are all kinds of design and program errors that can happen in any complex system, and that's probably what accounts for a lot of the parasomnias."

And where is the self in this enchanted complexity? Hobson is not one to write it off as a chimera yet: "The self is a gorgeous construct, an essential construct that is capable of making many decisions. You can't tell me it doesn't matter. People will say to me, 'Oh, well, you're just as religious as the theists,' and I say, 'O.K., we might find out that it's all automated, but it sure doesn't feel that way.'"

In another society Lindsey Conlon might be a healer or a shaman and her powers of dissociation cultivated on the trellis of a spiritual tradition. Her gorgeous construct is grappling with a parasomnia whose very name -- parasomnia overlap disorder -- attests to the potency of Hobson's model and the idea that the brilliantly promiscuous brain can exist in more than one state at once. Here's a portion of the write-up of Lindsey's first night in the Minnesota clinic lab in May 2000: "The study was notable for numerous spontaneous brief arousals from all stages of non-REM and REM sleep. . . . Periodic limb movements were present throughout all stages of sleep, often but not always associated with arousals from sleep. REM sleep was characterized by a relative lack of atonia. . . . There was one episode of sleep-talking."

"And I know they didn't see the half of it," Lindsey told me in October when we met for dinner at a restaurant in northwest Minneapolis. "Who can sleep with that camera on them?"

Lindsey works as a patient-services coordinator at a local hospital. She is 24 years old. She has high cheekbones and lanky brown hair, which she pushes back behind her left ear but lets hang freely over her right because she doesn't want people to see the hearing aid she wears in it. She was born profoundly deaf but has learned to speak with almost no impairment.

"I remember when I was around 6," she said, "I walked out of my bedroom into the kitchen, poured a glass of water and then picked up a stack of serrated computer paper and pulled the sheets around the living room in a complete circle. My mother thought I was awake and couldn't understand what I was doing. I've always sleepwalked. I've always had conversations with myself. I'll ask myself a question and answer it. I'm aware I'm doing this but I can't dissociate enough to tell myself to shut up. But it never really struck me as a problem."

But in 1999, on vacation, she was staying with some girlfriends in an Orlando hotel room. During the night, Lindsey got up in the middle of a dream, convinced the group would soon be swallowed in a flood. She paced from bed to bathroom, imploring her roommates to evacuate. Finally her friend Jenny woke up.

"What the hell are you doing?" Jenny said.

"We've got to get out of here!" Lindsey said.

"Lindsey, did you take anything?"

"I'm going outside!"

Jenny managed to get Lindsey back to bed.

Not long after, back in Minneapolis, Lindsey was sleeping at her boyfriend's house, and she had another partial arousal.

"I crawled over him, turned on the light, opened his closet, put on a shirt and went to my purse to get my car keys. I started talking about how I had to get something out of the car. The guy woke up, luckily, and lured me back to bed. My eyes were open the whole time. I was awake at some level, but it's almost like I had a virtual-reality headset on. I remember crawling over him, turning on the light, and him looking at me and saying, 'What the hell are you doing?' I know I'm doing what I'm doing, but it's like I can't dissociate enough from the actions to tell myself to stop. That's what made me nervous. I actually had the car keys in my hand."

When she got "caught" talking or walking in her sleep, she invariably felt embarrassed and stupid, she said. "I've been trying to find a pattern. Is it the moon? Is it stress? Am I upset about something? I can never correlate it with anything. Where it comes from, why it happens -- I don't know."

Unlike most sleepwalkers, Lindsey is often dreaming while she walks, and unlike most people with REM behavior disorder who usually don't get too far from their beds, she can stray some distance. She has always had hypervivid dreams and often the sensation of dreaming all night without interruption, a phenomenon described in sleep medicine as "epic dreaming."

"I had one dream where I was in a war, and I could see the decals on the planes flying by and the bombs coming out," Lindsey said. "I could feel the ground shaking as they hit. I was with my family, we were all running away, and I kept saying, 'We have to keep moving!' It was unbelievably intense. I know I'm dreaming. I can control some of them. I'm almost always watching myself. I've watched my own funeral. I remember walking into church and seeing my family and realizing it was my funeral, and then walking around the corner and seeing the casket and it was me lying in it, and saying: 'No! No! No!' It was more vivid than a movie."

She referred herself to the Minnesota clinic and received a diagnosis of parasomnia overlap disorder -- unwanted behavior in REM and NREM sleep. Her medication has quelled the arousals and blanked out her dreams. That's good in some ways; in other ways it has dulled something in her that perceived the world in a rare way.

"The good thing is that I'm not always wondering why I have this condition, or what it symbolizes, or what's going on in my life that's making it happen," she said. "And my fiance, Mike, is able to sleep next to me. I

take Xanax a half-hour before bed. I can feel my whole body dropping. It's like someone hits you on the head. I go right to sleep. I'm still exhausted during the day, though, and now I take Adderall to wake up. And I wonder if the drugs are just masking things. Are they really slowing down my brain waves or just making it so I don't notice the states I used to be in."

She pushed her hair back over her left ear.

"I think I have a different way of looking at things because I was born deaf," she said. "I think one reason my dreams might be so vivid is that I depend so much on vision, and I'm very sensitive to touch."

And weirdly she was always having deja vu experiences. She wondered if her easy access to altered states had made her especially aware of odd synchronicities and the way dreaming and waking were entwined. When the dream world was more vivid than the waking one and she was able to move around inside it, swept up in its matchless enchantment and creativity, knowing she was dreaming yet able to exert some measure of her will (except in those moments of horror), sometimes she wondered whether her condition was a disorder or a gift.

A White Crow

f it's the case that most parasomnias express nothing more than the gibberish of a confused brain -- that they have more to do with genes and physiology than with repressed conflicts or pathogenic secrets; more to do with the mechanics of the brain than with trouble on the mind -- it's also true that once in a while a parasomnia can articulate the essence of a person's life. Some sleep-related behavior can seem to be permeated with psychological meaning. Perhaps it can even be caused by what's on a person's mind. Generally these cases are as rare as the proverbial white crow. As Mark Mahowald emphasized: "The percentage of patients performing psychologically significant actions is minuscule. I'm not sure our center has seen a single example."

But now and then, a white crow turns up. Last September, I heard about a sighting from Dr. John Winkelman, a 46-year-old assistant professor of psychiatry at Harvard medical school and a well-known authority on parasomnias. Winkelman had described how post-traumatic-stress disorder patients sometimes suffered from insomnia because trauma had made them hypervigilant. But he had recently seen a 50-year-old woman with post-traumatic-stress disorder whose complaint was not insomnia but sleepwalking.

When she would stay at her daughter's house, she would get up, walk to her granddaughter's crib in the nursery, put her fingers in the baby's mouth and appear to be trying to clear the girl's airway. Sometimes she would give her mouth-to-mouth resuscitation. As the baby needed none of this, the girl's mother was freaked out. "Although we have no way of knowing for sure without observing her behavior in a sleep lab study, the woman was probably sleep-walking because she had no memory of the behavior," Winkelman said. "And it was usually happening in the first hour of sleep. I asked when the behavior started, and she said it was 10 years ago. I asked if anything had happened around that time. She said as a matter of fact, yes, she had been baby-sitting for some parents and had fallen asleep, and while she was asleep the parents came home and discovered the baby had died in the crib."

"So in her sleep she was trying to save the child," I said.

"Or trying to undo the event," Winkelman said. "This is a meaningful parasomnia. In a way it would be easier to treat her if we didn't know the story. We could do a clinical work-up, handle it like a typical case of

sleepwalking. Maybe she had some sleep apnea that was causing the arousals. We could prescribe some Halcion, and in a practical sense we would be preventing her from doing the behavior."

"But you wouldn't be helping her atone."

Winkelman nodded -- humbled, it seemed, by the immense domain of suffering beyond the bounds of medicine.

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