2

Deconstructing the Self

That this is so, we have some kind of evidence in our very bodies, all whose particles, whilst vitally united to this same thinking conscious self, so that we feel when they are touched, and are affected by, and are conscious of good or harm that happens to them, are a part of our selves. Thus the limbs of his body are to everyone a part of himself; he sympathizes and is concerned for them. Cut off an hand, and thereby separate it from that consciousness we had of its heat, cold, and other affections; and it is then no longer a part of himself, any more than the remotest part of matter.

John Locke, 1690

Asomatognosia

There are many perturbations of the self in which the relatedness of the self to a part of the body, other persons, places, or experiences is severely altered. One of the most dramatic alterations of the self that the neurologist encounters in the course of clinical practice is the condition known as *asomatognosia.* Asomatognosia literally means "lack of recognition of the body." The patient with asomatognosia not only does not recognize a part of the body; he or she may totally reject it. A patient of mine serves as an example of the person with asomatognosia.[1]

Mirna

I met Mirna for the first time when she was an inpatient on the neurology service. A woman in her seventies, she was admitted to the hospital with an acute stroke. The term *stroke* refers to an injury to the brain that is caused by problems with the brain's blood vessels. All the asomatognosic patients I have examined have had strokes. As is the case in the majority of asomatognosic patients, Mirna's stroke damaged large portions of the right hemisphere of her brain (Figure 2–1).

The region of damage included the motor and sensory centers of her right hemisphere. As a result, her left arm was paralyzed and she lacked

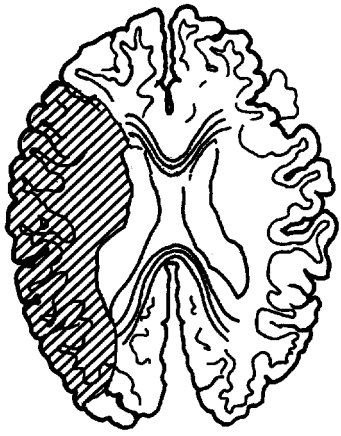

Figure 2-1.
A CAT scan of Mirna's brain demonstrated massive right frontoparietal damage, as represented by the area of infarction.
Unaware that her left arm belongs to her, Mirna ascribes it to her husband, who died of a stroke not long before Mirna's own injury.

sensation on the left side of her body. Damage to the *right* hemisphere causes problems on the *left* side of the body because the motor and sensory centers from each half of the brain have their greatest control over the opposite side of the body. Damage to the right hemisphere may also cause visual impairment on the patient's left side.

Mirna was lying quietly in her hospital bed. She was alert and responded readily to my queries, but her gaze was locked toward her extreme right, the result of a condition called hemispatial neglect. *Hemispatial neglect* (or simply *neglect*) is broadly understood to be a disorder of attention. A patient with hemispatial neglect displays a marked tendency to ignore stimuli in the area of space (referred to as the hemispace) on the side opposite a brain lesion.[2] To minimize the effects of neglect, and ensure that the patient pays attention to the left arm, one stands on the patient's right side and then gently moves the arm over to her right side, extending the left hand and forearm to the right as much as possible. After performing this maneuver, I asked Mirna to identify what I was showing her:

FEINBERG: *I want to ask you again now. What is this over here? Take a look at this over here. What is this?*
MIRNA: *Your fingers.*
FEINBERG: *My fingers?*
MIRNA: *Yes.*
FEINBERG: *Look at them again, take a good look now. OK ... tell me what they are.*
MIRNA: *Fingers ... I see two fingers and a pocket.*
FEINBERG: *Take a good look. What is it? This* [tapping the back of her hand].

MIRNA: *The back of your hand.*
FEINBERG: *The back of my hand?*
MIRNA: *Yes.*
FEINBERG: *Suppose I told you this was your hand.*
MIRNA: *I wouldn't believe you.*
FEINBERG: *You wouldn't believe me?*
MIRNA: *No, no.*
FEINBERG: *This is your hand.*
MIRNA: *No.*
FEINBERG: *Look, here's your right hand, and here's your left hand.*
MIRNA: *OK.*
FEINBERG: *Now, what's this* [holding out her left hand]*?*
MIRNA: *The back of your hand!*

How do we explain Mirna's problem? The first question to answer is how *specific* is the misidentification? For instance, could her failure of identification of her left side be due to a general problem with language? Perhaps she knew it was her left arm, but just couldn't properly communicate this idea. Alternatively, perhaps Mirna's inability to identify parts of her body was not a problem specific to her left side, and she actuality had an inability to identify parts of her body on either side. Finally, one should also consider whether her problem is limited to identification of the parts of her body or if she has difficulty identifying parts of anyone's body.

In order to evaluate these possibilities, I checked if Mirna could correctly identify her right hand. I found she could and concluded from this that her identification failure was not due to problems with language or naming body parts. Mirna also had no difficulty identifying my right or left hand, or pictures of hands, feet, eyes, or ears. Whatever the basis of Mirna's asomatognosia, her problem was specifically a difficulty with the proper identification only of the left side of *her* body.

There is another reason why general perceptual, language, or cognitive impairments do not account for Mirna's difficulties. Her asomatognosic misidentifications were refractory to correction. She could not readily be "talked out of it"; her beliefs about her hand are more delusions than simple errors. Despite my attempts to correct her, to point out that indeed it was her hand she was staring at, she never could truly be convinced of the truth of the situation. In most asomatognosic patients, with their good right hand they can trace the connection of the limp arm to the left shoulder yet remain convinced that it is not their arm. This was the case with the patient described by Dr. Clarence W.

Olsen at a meeting of the Los Angeles Neurological Society in 1937. His patient had a stroke of her right hemisphere, which paralyzed her on the left side of her body.

> She denied that the affected limbs were hers and said that "yours" or another's were in bed with her. When she was shown that they were attached to her and that the arm in question merged with her shoulder and that it must be hers, she said: "But my eyes and my feelings don't agree, and I must believe my feelings. I know they look like mine, but I can feel they are not, and I can't believe my eyes."[3]

The refractoriness to correction shown by Mirna and other asomatognosic patients is not typical of most neurobehavioral disorders. For example, the patient who gropes for words or cannot read due to aphasia generally accepts, indeed is grateful for, help when it is offered. There was something more basic going on with Mirna. Her problem was rooted in a fundamental disturbance in who and what she believed herself to be.

Mirna had all the typical features of the patient with asomatognosia. Her rejected arm is severely paralyzed and she had significant loss of sensation in the arm. Proprioception, the feeling and knowledge of the position of the limb in space, was particularly impaired in Mirna, and this is true of most asomatognosia patients. Unless she looked directly at her arm, she was unable to sense where the arm was located in space.

In Mirna's case, I was not aware that she had asomatognosia until I specifically asked her to identify her arm, but in some cases, it is obvious to the medical staff that a patient has the condition. For instance, the presence of asomatognosia was readily apparent in a patient of mine who repeatedly tried to throw his left arm out of the bed. Other patients affected with the condition complain to the hospital staff that someone is lying next to them in the bed. Nielsen described a forty-eight-year-old woman, who when asked about her left side explained, "That's an old man. Stays in bed all the time."[4] Spillane spoke of an officer-cadet in a military hospital who claimed "that there was no room for 'him'–some other person–between his own body and the wall."[5] Ullman and coworkers told of the patient who upon picking up her paralyzed left limb complained: "Nobody had any business being in my bed."[6]

Mirna had left hemispatial neglect and misidentified her left arm. The overwhelming majority of patients who display asomatognosia misidentify their left arm. A small number reject the left leg as well. I have examined over one hundred patients with asomatognosia and not a single case

was caused by damage to the left hemisphere with nonrecognition of their right arm or leg. One reason the left arm is more commonly affected with the condition than the right may be due to the association between asomatognosia and hemispatial neglect.[7] Hemispatial neglect is more severe and long lasting after damage to the right hemisphere.[8] The right hemisphere has the capacity to direct attention to both sides of space. When there is damage to the left hemisphere, the right hemisphere can compensate for the loss, and the patient is still aware of both sides of the world and the self. On the other hand, the left hemisphere is much more unilateral in its attentional capabilities, and is best at directing the patient's attention to the opposite (right) side. In the presence of damage to the right hemisphere, the left hemisphere has limited capacity to adapt, and the left side of space and the body may be ignored.[9]

The clinical manifestations of neglect are among the most colorful in neurology. A patient with a right hemisphere lesion and left hemispatial neglect might not shave the left side of the face, dress the left half of the body, or eat items on the left side of the hospital tray. When attempting to walk, the patient might collide with objects on the left or ignore people who approach them from the left side. If paralyzed on the left side, which often is the case, these patients tend to ignore the immobile extremity and may carelessly (and dangerously) sit on the paralyzed extremity. When I bring a group of residents on clinical rounds to examine a patient with neglect, I often ask the patient to count the number of doctors gathered around them. The patient invariably starts counting from their right side, gets midway to the left and stops, leaving out roughly half the group.

Patients with hemispatial neglect do not simply ignore stimuli on one side; these patients act in a manner as if nothing of *personal significance* could occur on that side.[10] When asked to cross out lines distributed on a page, the so-called line cancellation task, the neglectful patient will cross out only those lines on the right. When it was pointed out that lines on the left were missed, one of my patients exclaimed, "Oh, those don't count!" and still refused to cross out the line he had missed on the left. When asked to draw a clock, neglect patients will draw only the right half; copying a flower results in a daisy with petals only on its right side. When instructed to mark a line at its center, the midline for the patient is seen to be far to the right (Figures 2–2a–c).[11]

Mirna had a powerful sense of estrangement from the hand. The patient with asomatognosia often expresses the belief that not only is it not their hand but also that it simply cannot be their hand. My patient Sonya demonstrates this estrangement from the limb.

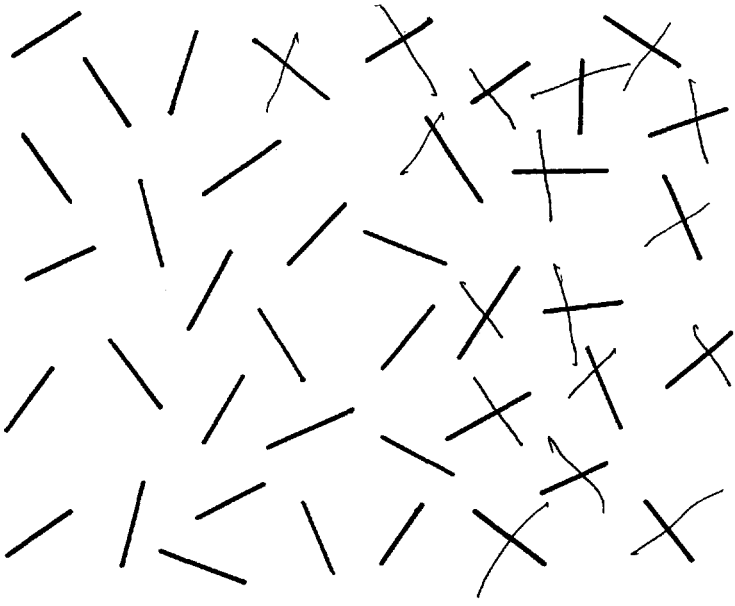

Figure 2-2a.
In a line cancellation task, the patient is instructed to cross out all the lines on the page. The figure shows a cancellation task produced by a patient with left hemispatial neglect. This patient only marked the lines that appear on the right side of the page and she ignores all the stimuli on the left.

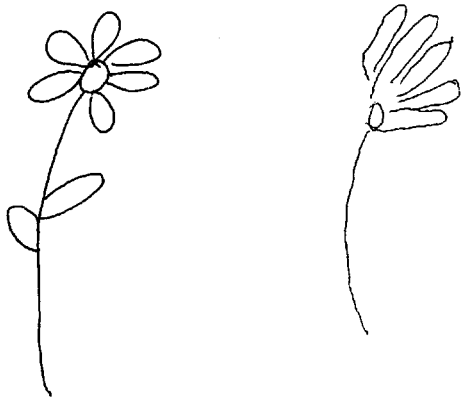

Figure 2-2b.
Another patient with left neglect was asked to copy the drawing of a flower shown on the left. The patient left out details from the left side of the drawing.

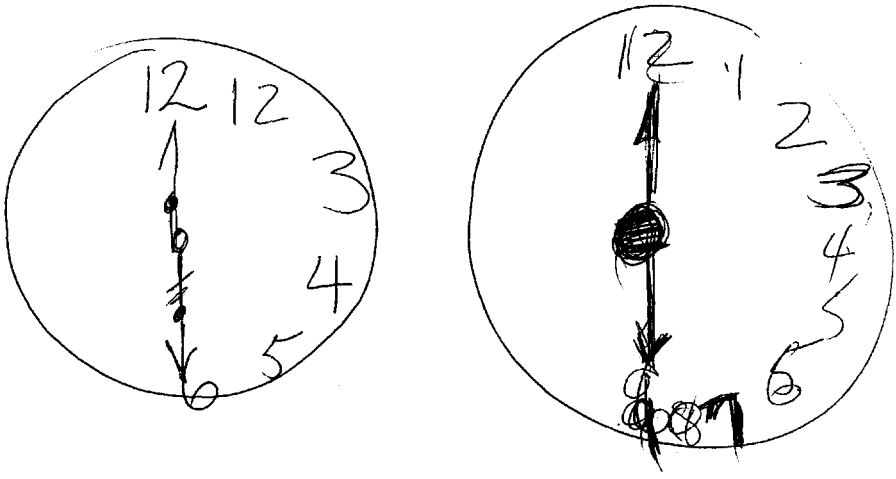

Figure 2-2c.
A third patient with left hemispatial neglect was asked to draw a clock. The patient at first drew the clock on the left, and omitted the numbers on the left. He spontaneously set the clock at 6:00. I then asked him to draw another clock and make this one 9:30. The figure he produced to these instructions is shown on the right.

Sonya

Sonya was a woman in her seventies. An accomplished musician, she was originally from Vienna and spoke with a heavy German accent. Like Mirna, Sonya was hospitalized after a stroke that damaged large portions of the parietal lobe of her right hemisphere. She was paralyzed on the left side of her body, and had considerable neglect of the left side of her body and the left side of the space about her. I moved her left arm to her right side and asked her to identify it.

FEINBERG: *What is this?*
SONYA: *A hand.*
FEINBERG: *A hand? Whose hand is it?*
SONYA: *Not mine!*
FEINBERG: *It's not yours? How do you know?*
SONYA: *Well, its just not mine.*
FEINBERG: *Are you positive?*
SONYA: *Yeah* ...
FEINBERG: *Well, whose could it be? This hand here.* [Her hand is held before her eyes. No response.] *Does it have another name? What would you call it?*
SONYA: *A strange.*
FEINBERG: *A strange? You'd call it a strange?*

SONYA: *Yeah.*
FEINBERG: *But it's a hand?*
SONYA: *Yeah.*

Personification of the Limb

Some patients with asomatognosia attribute ownership of the limb to the doctor, claiming it's "your hand" or "the doctor's hand." Some patients plead ignorance and say simply, "I don't know," "I have no idea," or "How should I know? You're the doctor!" Women display a tendency to claim the arm belongs to a man, often the patient's husband. Two patients described by Ullman and coworkers also claimed that their paralyzed left arms belonged to their dead husbands.[12] Interestingly, in contrast to women, men appear more likely to claim that the misidentified arm belongs to a woman. In this case, the patient most often claims that the arm belongs to a daughter or mother-in-law.

The British neurologist Macdonald Critchley studied many patients with asomatognosia, and he highlighted the remarkable tendency of some of these patients to personify their paralyzed limbs. Critchley described the peculiar manner in which some asomatognosic patients related to the misidentified arm, as if the arm possessed a complete, independent identity. Some striking cases treated the arm as if it were a small child or a household pet. A gentleman who came under Dr. Critchley's care displayed this unique behavior. The patient spoke of his arm in the third person, referring to it as "He." This patient, when speaking of his weak left arm, reported, "He gets tired sometimes; he doesn't keep time with you; he gets out of step. He gets very lazy; he sits and hangs about and when he does get hold of you he doesn't want to leave you. He's been doing this for a week." Critchley went on to describe the peculiar behavior that the patient directed toward the weak limb:

> Asked to open his fist, he held it up before him, still clenched, and then began to cuddle and caress it, patting it and rubbing it, talking to it and encouraging it, e.g. "Come on, you little monkey, don't let us down. Come on, "Monkey." I used to call him "Lucky." We're doing nicely now, so we'll call him "lucky." Come on, "lucky." . . . The nursing staff observed that at meal-times he would "feed" the "little monkey" with a spoon, saying, "come on, have a bit."[13]

Critchley relates the wonderful nicknames his patients gave to their limbs, such as "George," "Toby," "Silly Billy," "Floppy Joe," "Baby," "Gammy," "The Immovable One," "Curse," "Lazy Bones," and "The Nuisance." One patient designated his paretic left arm "James" and

referred to his left leg as " lefty." My patient Mirna had a tendency to personify her left side. When asked to identify her left arm, she several times called it her husband's arm; she also once told me her left great toe was her husband's. Mirna's husband had been dead for years. She expressed a number of interesting beliefs regarding her husband's hands.

FEINBERG: *What is this about your husband's hands? Did you have your husband's hands?*
MIRNA: *I did.*
FEINBERG: *Tell me about that. What happened?*
MIRNA: *He left them.*
FEINBERG: *He left them to you?*
MIRNA: *He didn't want them.*
FEINBERG: *OK. Well, did he leave them to you in his will?*
MIRNA: *He just left them like he left his clothes* [tearfully].
FEINBERG: *So they were in the house? Tell me about them.*
MIRNA: *Up until the other day. They used to fall on my chest. I said " I got to get rid of them!"*
FEINBERG: *Yeah.*
MIRNA: *So I did.*
FEINBERG: *So what did you do?*
MIRNA: *Put them in the garbage.*
FEINBERG: *You put them in the garbage?*
MIRNA: *Yes ... two days ago.*
FEINBERG: *Where are they now?*
MIRNA: *Still in the garbage ... a black hand, with a plastic cover ... you'll find them there. Be careful, though ... the nails are very long ... and very sharp. How come nails grew on dead hands?*
FEINBERG: *I don't know ... How do you figure that?*
MIRNA: *I don't understand; if it's dead, it's dead. I don't know.*
FEINBERG: *How do you account for that?*
MIRNA: *I can't ... maybe they're not completely dead.*
FEINBERG: *What would that mean?*
MIRNA: *Nothing at all.*
FEINBERG: *Why did you get rid of them?*
MIRNA: *They were bothering me. They used to fall on my chest when I slept ... and they're very heavy. And the nails used to scratch me.*
FEINBERG: *Sounds like they were alive!*
MIRNA: *No ... they were dead, dead, dead! I tell you, you can take my word for it.*
FEINBERG: *How many years did you have them?*

MIRNA: *Maybe two. Since I was sick.*
FEINBERG: *Since you were sick you had them? Why did you throw them out?*
MIRNA: *Because I thought they were hard luck.*
FEINBERG: *Why did you get rid of them after all those years?*
MIRNA: *Because I got the stroke ... and I thought maybe I'd die here like he did!* [At this point she began to cry.]

Mirna struggled with the reality of her new and tragic circumstances. She felt her left hand was lifeless and she expressed this feeling in her story about her dead husband's hands. Mirna's identification with the husband went beyond her left hand; she seemed to believe her entire illness was connected with her husband's death and that she might suffer the same fate he did. What is the connection between Mirna's statements about her hands and her feelings about herself?

The neurologist and psychoanalyst Edwin Weinstein, with whom I had the opportunity to study while I was a medical student and later as a resident in the Department of Neurology at the Mount Sinai School of Medicine, was, along with Critchley, among the great observers of neurological phenomena. Weinstein argued that the manner in which asomatognosic patients referred to their arms could be interpreted as *metaphorical* expressions of their feelings about themselves. It was Weinstein's position that patients with asomatognosia who misidentified parts of their body displayed a disturbance in metaphorical speech and tended to express their feelings about themselves metaphorically.[14]

Weinstein argued that the use of personification was only one example of the use of metaphorical speech in his patients. He pointed out that his patients employed a variety of tropes when speaking of the affected arm. Weinstein cited the case of the man who referred to his paralyzed arm as "a canary claw, yellow and shrivelled"; other patients of his called it "a piece of rusty machinery" or "dead wood."[15] Metaphorical misidentification was also observed by Gilliatt and Pratt in a patient who described her paralyzed arm as "poor little withered hand."[16] Critchley also noted a case that described the affected arm as "like a bird's claw."[17] Halligan, Marshall, and Wade reported a patient who felt his left arm was "like a sack of coal."[18] Another case, recounted by the same authors, described how his left foot "looked and felt like a cow's foot." [19] My patient Mirna once told me that her left arm was "nothing but a bag of bones." Another patient complained to me that his left arm was "a useless piece of machinery."

Many patients, as was the case with Mirna, describe the left arm as "dead." Sometimes the patient appears to use the word "dead"

metaphorically, as in "dead tired." There are some patients, however, who seem to believe the arm is *literally dead.* The patient of Halligan and coworkers, whose left arm was "like a sack of coal," claimed he possessed a "third limb" that was "dead." Critchley observed a patient refer to his arm as "a piece of dead meat."[20]

Asomatognosic patients may express some frightening beliefs about their paralyzed arms. Although I have listened to hundreds of asomatognosic patients, I still may be surprised and taken aback by their comments about their arms. However, the use of metaphorical language in these patients actually may have an adaptive purpose. It was Weinstein's position that the use of metaphorical language demonstrated by these patients served to bring order, unity, and predictability to the frequently confusing circumstances of neurological illness. Under the conditions of brain damage, metaphorical language may seem more "real" to the patient than more conventional forms of expression and may help the patient cope with catastrophic illness. Faced with the life-threatening and chaotic circumstances posed by neurological illness, metaphor, more than everyday language, captured the way patients saw themselves and their disabilities.

Shirley

The next case beautifully illustrates the way the personification of a hemiplegic limb helps the patient adapt to illness. Shirley was a vibrant and intelligent woman in her fifties when a large stroke of her right hemisphere paralyzed her left arm and leg. Despite her recent neurological problems, Shirley remained alert and talkative. Her neurologist informed me that Shirley had some interesting things to say about her left arm:

SHIRLEY: *It took a vacation without telling me it was going. It didn't ask. It just went.*
FEINBERG: *What did?*
SHIRLEY: *My Pet Rock.* [She lifted her lifeless left arm to indicate what she was talking about.]
FEINBERG: *You call that your Pet Rock:*
SHIRLEY: *Yeah.*
FEINBERG: *Why do you call it your Pet Rock?*
SHIRLEY: *Because it doesn't do anything. It just sits there.*
FEINBERG: *When did you come up with that name?*
SHIRLEY: *Right after it went plop. I thought I'd give it a nice name even though it was something terrible.*

FEINBERG: *Do you have any other names for it?*

SHIRLEY: *Her. She belongs to me, so she's a her. She's mine but I don't like her very well. She let me down.*

FEINBERG: *In what way?*

SHIRLEY: *Plop, plop, rock, rock, nothing. I was on my way home, out the door, and then she went and did this* [Shirley pointed to her left arm]. *She didn't ask if she could* [she was shaking her head back and forth]. *I have to be the boss, not her.*

FEINBERG: *Is that its actual name? Would you say that is its real name?*

SHIRLEY: *For now. It doesn't deserve any better. I could paint it if I wanted to.*

FEINBERG: *Is it a real Pet Rock though?*

SHIRLEY: *No, it's my hand.*

FEINBERG: *So why do you refer to it as a Pet Rock? What do you mean by that?*

SHIRLEY: *It lays there like a lump. It doesn't do anything. It just lays there. It's like when you're Jewish and you go to a Jewish cemetery and put a rock on the tomb and it just lays there. It is supposed to say "I was here."* [Pointing to her left arm] *It's saying I'm here. But I'm not. I'm only sort of here. I'm not really here.*

FEINBERG: [I touched her left hand] *Is this part of you?*

SHIRLEY: *Un-huh. Not a part I like a lot.*

FEINBERG: *Do you dislike it?*

SHIRLEY: *Yeah.*

FEINBERG: *How do you feel about the real Pet Rocks?*

SHIRLEY: *Stupid.*

FEINBERG: *Is that something you'd give somebody as a present?*

SHIRLEY: *No.*

FEINBERG: *By calling it a Pet Rock*

SHIRLEY: [She interrupts me] *It gives it another life. Because without humor I'm nothing. I have to have a laugh a day, otherwise they're gonna put me away. So I give it a humorous reference.*

A week later I returned to re-examine Shirley. She was about to be discharged from the hospital and transferred to a rehabilitation facility. As I prepared to ask her some questions, she grabbed her left hand with her right, shook the limp arm, and began to sing to it:

SHIRLEY: *Wake up! Time to go home. What are we gonna tell your mama? What are we gonna tell your pa? What are we gonna tell your friends when they say ooo-la-la? Wake up little Susie. It's time to go home.*

[Then she held her left hand to her cheek and hugged it, kissed it, and petted it.] *She's a good girl.*

FEINBERG: *What was that?*

SHIRLEY: *"Wake Up Little Susie." Remember the Everly Brothers?* [Point to her left arm] *That's her. That's little Susie. She's been out all night long and she has to go home. That's it. She's done. She's gotta go home or they're gonna think she's the town whore* [laughing].

FEINBERG: *Why would you say that?*

SHIRLEY: *Because she's not behaving.* [She wiggled her arm again, pulling on her fingers as if to rouse it. Then she explained to me why she sang the song to her arm] *Wake up little Susie! It's a coping mechanism. It's like they used to say in* Reader's Digest, *"Laughter is the best medicine." It you can't laugh, what have you got? I thought I could bring her back with some loving kindness. So I sang it "Wake Up Little Susie," which is one of my favorite songs from the Everly Brothers.*

FEINBERG: *What's the theme of that song?*

SHIRLEY: *A girl and boyfriend were out too late at night. And the entire town is going to be talking about them. That she's being a slut. So it's a way of avoiding getting in trouble. And then he says "What are we gonna tell your friends when they they say ooo-la-la? Wake up little Susie. It's time to go home."* [Then she lifts up her left arm] *And I want to go home!*

The metaphorical personifications that Shirley used to describe her arm were condensed expressions of her feelings. A Pet Rock, like her paralyzed arm, "lays there like a lump" and is "stupid." The association Shirley made between the Pet Rock and the stones that, according to tradition, are left on a Jewish grave was a metaphorical expression of her feeling that her arm was lifeless. Shirley's choice of the Everly Brothers hit "Wake Up Little Susie" was also laden with metaphorical meaning. The words of this song eloquently expressed Shirley's feelings about her circumstances. Like Shirley's paralyzed arm, Little Susie was asleep and she must be awoken. Shirley was upset that her arm would not move and did not know who "the boss" was, and Little Susie will be in trouble if she does not listen to the entreaties of her boyfriend and wake up. In this way, Shirley expressed both her love of her arm, as well as her anger toward a hand that would not follow her instructions. Finally, Little Susie was about to go home and Shirley was about to be discharged from the hospital. If Shirley's "Little Susie" would just "wake up," Shirley would also be able to go home.

Anosognosia

Many patients who display asomatognosia have the related condition of anosognosia, or denial of illness.[21] Anosognosia literally means "lack of knowledge of the existence of disease." Even though the rejected arm in asomatognosic patients is severely weak or completely paralyzed, most patients with asomatognosia deny or minimize their paralysis. When asked to raise the paralyzed arm or wiggle the fingers of that hand, they may claim the requested actions are performed quite normally. Indeed, some patients deny they are ill in any way. They often claim the paralyzed arm is just "lazy" or perhaps "a little tired." Denial or unawareness of paralysis is called " anosognosia for hemiplegia." The three conditions–asomatognosia, hemispatial neglect, and anosognosia–often occur together, usually as a result of damage to the right hemisphere.

As is the case with asomatognosia, the manifestations of anosognosia vary from case to case, and no two patients are exactly alike. To make matters more complicated, patients may vary in their insight from day to day, even hour to hour. The truly anosognosic patient is not just "confused" about his or her circumstances. This would not be terribly interesting and hardly worth the time of the hundreds of investigators who have studied the syndrome. The patient with definite anosognosia for hemiplegia is not simply unaware of their weakness: they cannot be convinced of the paralysis. My patient Jack can serve as an example of a patient with anosognosia.

Jack

Jack was a sixty-four-year-old construction worker. He had a right hemisphere stroke, which completely paralyzed his left arm (Figure 2-3). Jack had all of the syndromes described in this chapter. He had severe left hemispatial neglect. His eyes, rather than sitting in the midline, were deviated strongly toward his right, as if he were observing something going on in the far corner of the room. He ignored people if they approached him from his left.

Jack had asomatognosia and misidentified his left arm. He also had dense anosognosia and insisted that he was in pretty good health. He made this claim, even though he was lying in a hospital bed in a gown, with an intravenous line in his right arm. Jack knew, all too well, that the *doctors* thought he was ill, that he had suffered a stroke; he even knew the hospital staff thought he could not move his left side. Despite this knowledge, he held to his belief that he was not ill in any way. Jack insist-

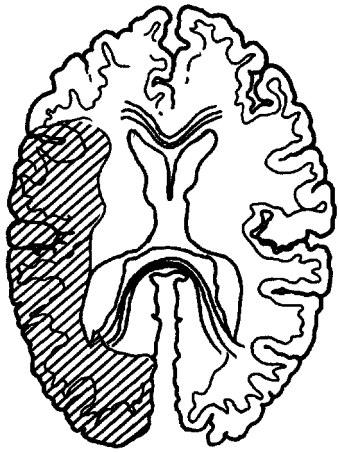

Figure 2-3.
As this CAT scan shows, Jack's infarction extended from the rear frontal portion of his brain all the way back to the occipital portion, which is responsible for visual perception.
While he cannot move his left side of his body and attend to objects in his left visual field, Jack was convinced that he is in perfectly fine shape (anosognosia).

ed that all was well, and, if the doctors would only let him, he would get right up and leave.

FEINBERG: *If everything is fine, why are you lying in the bed now?*
JACK: *I'd like to be home right now . . . I swear I'd like . . .*
FEINBERG: *I don't blame you. But why are you lying in the bed now? Is there anything wrong?*
JACK: *The doctors seem to think so*
FEINBERG: *The doctors seem to think so? What do you think they think is wrong with you?*
JACK: *They think I had a stroke or somethin.'*
FEINBERG: *Or something?*
JACK: *Yeah.*
FEINBERG: *What do you think?*
JACK: *I don't think I had a stroke.*
FEINBERG: *Why don't you think you had a stroke? Any particular reason?*
JACK: *I'm sure if I had a stroke I'd feel a lot worse than I feel.*
FEINBERG: *Than you do now? Huh! Cause you're feeling' pretty good now . . .*
JACK: *Yeah.*
FEINBERG: *OK.*
JACK: *My mother's in the hospital right now.*
FEINBERG: *Your mother is?*
JACK: *Yeah.*
FEINBERG: *What's wrong with her?*
JACK: *She had a stroke while she was in the hospital.*

FEINBERG: *She was in the hospital also?*
JACK: *Yeah.*
FEINBERG: *What's this?* [I held up Jack's hand.]
JACK: *My mother-in-law's hand. Someone's hand. I think it's my mother-in-law's hand.*

In some of the most severe cases of anosognosia, especially those in which the patient also displays asomatognosia, despite total paralysis of the left side the patient will insist that the arm is actually moving, that the fingers are wiggling, or the leg is up in the air.[22] Joseph Babinski, who introduced the term anosognosia in a 1914 paper, described how one of his patients, when she was told to raise her paralyzed arm, exclaimed "Voila, c'est fait."[23] My patient Rodney had a left hemiplegia and referred to his left arm, as a "dummy arm." He claimed the arm moved quite well:

FEINBERG: *Raise your right arm please,* [patient raises his right arm]. *Now is your right arm on the bed or in the air?*
RODNEY: *In the air.*
FEINBERG: *OK. Put your right arm down for me. Now raise your left arm.* [No movement, no response; left hand remains paralyzed on the bed, on the patient's left side.]
FEINBERG: *Where is your left arm now?*
RODNEY: *Up in the air.*
FEINBERG: *It's up in the air? How high is it now about?*
RODNEY: *Not too high.*
FEINBERG: *Not too high?* [Patient is asked to point to his left arm. With his right hand he points two and a half feet above the bed.] *Okay, good put your right arm down, now. Put your left arm down. Now, where is your left arm?* [Patient points to his left arm on the bed].

Even though Rodney's arm remained paralyzed throughout his hospital stay, his belief that he could move the arm diminished during this period. At the same time his insight into the true nature of his paralysis increased. When he started to realize the consequences of his stroke and the nature of his illness, he claimed he could lift the hand only "two inches off the bed." When he fully understood that he might never recover the use of the arm, Rodney admitted he could not lift the arm at all.

Weinstein was a strong proponent of the view that anosognosic patients were not merely unaware of their illness; they were in deep denial of their problems. For Weinstein, the presence of psychological

denial was the main reason anosognosic patients could not, or would not, admit they were sick or disabled, even when the facts of their illness were obvious. Consider Patsy, who could not be convinced she wasn't well despite much evidence to the contrary.

Patsy

A woman in her sixties, Patsy was physically well and enjoyed an active career until one day when she suddenly could not move her left side. She fell to the floor, unable to get up, and wasn't discovered until hours later, when her husband returned from work. She was rushed to the hospital by ambulance, and an emergency CAT scan of her brain revealed she had a large stroke of her right hemisphere. Her doctors had told Patsy quite clearly that she had experienced a stroke. She knew what I thought was wrong with her; she just didn't agree.

FEINBERG: *OK. What are you doing here?*
PATSY: *You all tell me I have a weak left side.*
FEINBERG: *I'm sorry?*
PATSY: *You all say I have a weak left side.*
FEINBERG: *We all say you have a weak left side?*
PATSY: *And I don't agree!*
FEINBERG: *And you don't agree?*
PATSY: *No.*
FEINBERG: *Why?*
PATSY: *Because I know I don't!*
FEINBERG: *It feels fine?*
PATSY: *Yes.*
FEINBERG: *There's no weakness over there . . .*
PATSY: *No.* [She is asked to raise her right arm, which she does.]
FEINBERG: *Now raise the other arm for me. Raise your left arm for me. Can't you do that for me?* [Pause.] *Did you do it? Did you raise it?*
PATSY: *I did now.*
FEINBERG: *You did now? Do you have any difficulty raising it?*
PATSY: *No.*
FEINBERG: *OK then. Why don't you touch your nose?* [Touches nose with right hand.]
FEINBERG: *Why don't you touch it with the other hand? Can you touch it with the other hand?*
PATSY: *Yes.*
FEINBERG: *Could you do it for me?* [No movement.] *Are you doing it?*

[Again, no response.]

[After a pause.] *You know, it would seem to me that if you couldn't touch your nose with your left hand, that there might be some weakness over there. How does that sound to you?*

PATSY: *No.*

FEINBERG: *You adamantly disagree? You are absolutely certain there's no weakness over there? Could you tell me why you won't touch your nose with your left hand? Is there a reason for that?*

PATSY: *Because I think I'm a comedian . . . and I'd probably make an obscene gesture.*

[One week later.]

FEINBERG: *What's wrong with you?*

PATSY: *I had a slight stroke.*

FEINBERG: *Oh . . . really?* [Turning to the family who were present.] *Has she been admitting that more readily?*

PATSY: *Do they have an AA for stroke patients?*

FEINBERG: *I'm sorry.*

PATSY: *Do they have an AA for stroke patients? Yeah. Where they have to admit they had strokes.*

FEINBERG: *Would you enter that?*

PATSY: *Yes.*

In the most severe stages of anosognosia for hemiplegia that occur in the first hours or days after a stroke, the patient adamantly denies that there is a paralysis. This period of total denial generally resolves within days or weeks after the onset of the hemiplegia and gradually the patient comes to admit the true nature of their paralysis. This realization often occurs in stages. At first, the patient may admit the *doctors think* the patient is paralyzed, but the patient disagrees with their assessment. One of my patients told me "there was a rumor on the floor" that the patient was paralyzed, but "you know how unreliable rumors are." Another patient told me that it was the case that the doctors "seem to think some paralysis has set in." I asked him if he agreed with their judgment and he told me " I don't know . . . I'm not the expert!" As more time passes the patient may admit the paralysis but minimize its consequences for their lives and livelihoods. A patient in this stage of partial awareness might report that, despite the severe paralysis, he plans a swift return to physical labor or to resume jogging within a week. Ultimately, most patients understand the true nature of the paralysis and the obstacles they must face. These obstacles often include a long period of rehabilitation and the possibility of permanent disability. My

patient Daryl reflected on the gradual realization that his left arm was paralyzed.

Daryl

Daryl was a very intelligent electrical engineer. He was relatively young, in his early fifties, when he sustained a massive stroke of his right hemisphere (Figure 2–4), which resulted in complete paralysis of his left side. During the initial stages of his illness, Daryl denied that there was anything wrong with him. He spoke freely about his future, and appeared ready at any moment to leave the hospital and pick up his life where he had left off. Over the next few weeks, Daryl reluctantly admitted to the painful consequences of his illness. At this point I asked him to describe what he was thinking during the period of his anosognosia.

DARYL: *That's my left hand, which I understand people who have strokes, they tend to ignore parts of their left body. They say "Go away. I don't want to know you!" It's a way of getting back.* [Pointing at his left arm.] *I'll hate you the rest of my life for acting this way. That's what we tend to do. I don't know the reality of it . . . the reasons for it, but apparently it's quite valid.*

FEINBERG: *That's the way you feel?*

DARYL: *This is common among stroke people. They tend to ignore . . . It could be with me too, because I was sleeping on my arm the other day. And I remember waking up and saying "Good Lord! I gotta get up and pack this before I leave or I'll leave it here" . . . we tend to admit a piece of ourselves is not a part of ourselves. We'll say it belongs to somebody else because it's sick. We'll give it away because we don't want it. That's why I slept on it. I didn't want it. I wanted*

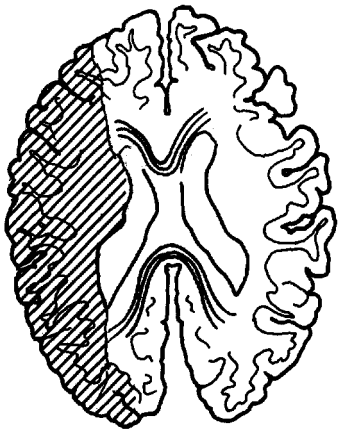

Figure 2-4.
Daryl's uncharacteristic behavior was caused by a large, right frontoparietal infarct, as seen in his remarkable CAT scan. Despite his severe paralysis, Daryl thought he was well.

to cover it up, to shield it. But when I realized it was my own arm, and I had to take it with me to be a success. I was gonna pack it, not leave it here. The only person it's going to be any good to is me. Even if it's slow to function . . .

Explaining Asomatognosia

It is amazing that people quite normal prior to a stroke could reject, misidentify, or deny a part of their body that they have known, lived with, and depended on their whole life. Asomatognosia has always struck me as one of the most bizarre, horrifying, yet fascinating manifestations of neurological disease. One perplexing thing about the syndrome is most asomatognosic patients express strange beliefs only about their arm or their illness. Furthermore, before the onset of neurological illness, they were just like everybody else and had no more psychopathology than occurs in the general population. It is clear that brain pathology can destroy the integrated self in any of us.

It would be futile to seek a single answer to the question: What causes asomatognosia? Asomatognosia does not have one cause. Rather, the syndrome occurs as the result of the many factors discussed in this chapter. Neglect surely is an important element in the production of asomatognosia. However, the presence of neglect alone is not enough to produce asomatognosia. While I have never seen a case of asomatognosia without significant neglect, there are many patients with neglect who do not misidentify their paralyzed limbs.

Most patients with asomatognosia also display anosognosia. Mirna, however, was aware she had suffered a stroke. She was even aware that her left side was paralyzed. In spite of this I could not convince her that her left arm was indeed her left arm. Furthermore, some patients with anosognosia, particularly those cases with mild forms of the condition, do not display asomatognosia.

Additionally, anosognosia occurs in many neurological illnesses besides hemiplegia. Patients may be unaware of blindness, or memory problems, or a host of other disabilities. For example, Anton's syndrome, or unawareness of blindness, is one of the classic neurobehavioral disorders. The syndrome was named after Gabriel Anton, who in 1899 described one of the earliest examples of this rather amazing condition.[24] The patient may seem alert and integrated, and often gives the appearance that nothing is amiss. On examination, however, it becomes apparent the patient is totally blind, yet oblivious to the impairment. Anton's syndrome

is not a common condition, but it is not rare either. Lizzy is a typical case of Anton's syndrome.

Lizzy

Lizzy was a woman in her late sixties. A former librarian, Lizzy had a history of cardiac problems, but otherwise had no significant medical history. Unfortunately, one day she suffered acute strokes in the occipital lobes of both her left and right hemispheres. The strokes destroyed the primary visual areas of her brain, and she was rendered suddenly and totally blind.

I examined Lizzy during the initial stages of her hospitalization. She was lying comfortably in her hospital bed and appeared to be very relaxed, despite her recent neurological catastrophe. She could not have been more pleasant. Indeed, she was *too* pleasant. She seemed completely unperturbed by the dramatic shift in her fortunes. If you asked her about her vision, she would always initially deny any impairment. However, her insight fluctuated, even within the course of a single interview. She might deny her blindness, and later admit it, but never did she seem to act as if her visual impairment was of any concern. She smiled throughout the interview and acted as if she had not a care in the world.

FEINBERG: *So, how are you?*
LIZZY: *All right. Fine thanks.* [She is smiling broadly.]
FEINBERG: *Is there anything bothering you? Any problems?*
LIZZY: *No* [emphatically]. *That's the strange thing. Nothing is bothering me*
FEINBERG: *Nothing is bothering you . . . you're feeling perfectly all right?*
LIZZY: *Yeah.*
FEINBERG: *Let me ask you. Where are you right now?*
LIZZY: *I'm uh . . . well I'm near where I live. I could be at* [gives address of the hospital] *At least it looks that way.*
FEINBERG: *You could be?*
LIZZY: *Yeah . . . if I had a stroke. But the last time I looked I was home!* [After further discussion of the current location, I address her visual impairments.]
FEINBERG: *Are you having any trouble with your vision in any way?*
LIZZY: *No.* [She says this with an inflection that suggests a tone of "surprisingly enough," as if she had thought of the possibility of blindness, but is pleasantly surprised to find that she has none.]

FEINBERG: *Why don't you tell me what you see. Look around now, and just tell me what you see here.*

LIZZY: [She looks about the room, moves her head back and forth, as if she is taking a really good look.] *It's good to see friends and family, you know. It makes me feel like I'm in good hands.*

FEINBERG: *Tell me their names.*

LIZZY: [She whispers to me, as if slightly embarrassed.] *I don't know everybody. They are my brother's friends.They look friendly, but I'm not sure exactly who they are.*

FEINBERG: *How many are here?*

LIZZY: *I'd say maybe twelve.*

FEINBERG: *OK. How many are men and how many are women?*

LIZZY: *Fifty-fifty.*

FEINBERG: *Is it split right down the middle?*

LIZZY: *Yeah* [laughing]. *Pretty much.*

FEINBERG: *Look at me. What am I wearing?* [I have on a white shirt, blue tie, black pants and a white lab coat.]

LIZZY: *A casual outfit. You know, a jacket and pants.*

FEINBERG: *What color pants are they?*

LIZZY: *Mostly navy blue . . . and maroon, or something like that.*

FEINBERG: *What about my shirt? Do I have a shirt on?*

LIZZY: *You have a shirt, but it isn't dressy. Looks like navy blue and white.*

Based on the foregoing, it is fair to conclude asomatognosia and anosognosia are related conditions, but the presence of one does not explain the presence of the other. Instead, asomatognosia is multidetermined and due to the interaction of both neurological and psychiatric factors.

One of the interesting aspects of asomatognosia is that, despite the fragmentation of the self, these patients strive to maintain an integrated self and make sense of their experience. Indeed, to a large extent they succeed. The neglected left side and the misidentified left limb leave a whole, a gap, in the self, that must be filled. The patient may disavow the arm, but something is put in its place, something of personal significance. In the next chapter, we will explore another condition in which the personal world of the patient is transformed.