To talk of diseases is a sort of *Arabian Nights* entertainment.
—William Osler

The physician is concerned [unlike the naturalist] ... with a single organism, the human subject, striving to preserve its identity in adverse circumstances.
—Ivy McKenzie

PART ONE LOSSES

Introduction

Neurology's favorite word is 'deficit', denoting an impairment or incapacity of neurological function: loss of speech, loss of language, loss of memory, loss of vision, loss of dexterity, loss of identity and myriad other lacks and losses of specific functions (or faculties). For all of these dysfunctions (another favorite term), we have privative words of every sort—Aphonia, Aphemia, Aphasia, Alexia, Apraxia, Agnosia, Amnesia, Ataxia—a word for every specific neural or mental function of which patients, through disease, or injury, or failure to develop, may find themselves partly or wholly deprived.

The scientific study of the relationship between brain and mind began in 1861, when Broca, in France, found that specific difficulties in the expressive use of speech, aphasia, consistently followed damage to a particular portion of the left hemisphere of the brain. This opened the way to a cerebral neurology, which made it possible, over the decades, to 'map' the human brain, ascribing specific powers—linguistic, intellectual, perceptual, etc.—to equally specific 'centers' in the brain. Toward the end of the century it became evident to more acute observers—above all to Freud, in his book *Aphasia*—that this sort of mapping was too simple, that all mental performances had an intricate internal structure, and must have an equally complex physiological basis. Freud felt this, especially, in regard to certain disorders of recognition and perception, for which he coined the term 'agnosia'. All adequate understanding of aphasia or agnosia would, he believed, require a new, more sophisticated science.

The new science of brain/mind which Freud envisaged came into being in the Second World War, in Russia, as the joint creation of A. R.

Luria (and his father, R. A. Luria), Leontev, Anokhin, Bernstein and others, and was called by them 'neuropsychology.' The development of this immensely fruitful science was the lifework of A. R. Luria, and considering its revolutionary importance it was somewhat slow in reaching the West. It was set out, systematically, in a monumental book, *Higher Cortical Functions in Man* (Eng. tr. 1966) and, in a wholly different way, in a biography or 'pathography'—*The Man with a Shattered World* (Eng. tr. 1972). Although these books were almost perfect in their way, there was a whole realm which Luria had not touched. *Higher Cortical Functions in Man* treated only those functions which appertained to the left hemisphere of the brain; similarly, Zazetsky, subject *of The Man with a Shattered World,* had a huge lesion in the left hemisphere—the right was intact. Indeed, the entire history of neurology and neuropsychology can be seen as a history of the investigation of the left hemisphere.

One important reason for the neglect of the right, or 'minor', hemisphere, as it has always been called, is that while it is easy to demonstrate the effects of variously located lesions on the left side, the corresponding syndromes of the right hemisphere are much less distinct. It was presumed, usually contemptuously, to be more 'primitive' than the left, the latter being seen as the unique flower of human evolution. And in a sense this is correct: the left hemisphere is more sophisticated and specialized, a very late outgrowth of the primate, and especially the hominid, brain. On the other hand, it is the right hemisphere which controls the crucial powers of recognizing reality which every living creature must have in order to survive. The left hemisphere, like a computer tacked onto the basic creatural brain, is designed for programs and schematics; and classical neurology was more concerned with schematics than with reality, so that when, at last, some of the right hemisphere syndromes emerged, they were considered bizarre.

There had been attempts in the past—for example, by Anton in the 1890s and Potzl in 1928—to explore right hemisphere syndromes, but these attempts themselves had been bizarrely ignored.

In *The Working Brain,* one of his last books, Luria devoted a short but tantalizing section to right hemisphere syndromes, ending:

These still completely unstudied defects lead us to one of the most fundamental problems—to the role of the right hemisphere in direct consciousness.... The study of this highly important field has been so far neglected. ... It will receive a detailed analysis in a special series of

papers ... in preparation for publication.

Luria did, finally, write some of these papers, in the last months of his life, when mortally ill. He never saw their publication, nor were they published in Russia. He sent them to R. L. Gregory in England, and they will appear in Gregory's forthcoming *Oxford Companion to the Mind.*

Inner difficulties and outer difficulties match each other here. It is not only difficult, it is impossible, for patients with certain right hemisphere syndromes to know their own problems—a peculiar and specific 'anosagnosia', as Babinski called it. And it is singularly difficult, for even the most sensitive observer, to picture the inner state, the 'situation', of such patients, for this is almost unimaginably remote from anything he himself has ever known. Left hemisphere syndromes, by contrast, are relatively easily imagined. Although right hemisphere syndromes are as common as left hemisphere syndromes—why should they not be?—we will find a thousand descriptions of left hemisphere syndromes in the neurological and neuropsychological literature for every description of a right hemisphere syndrome. It is as if such syndromes were somehow alien to the whole temper of neurology. And yet, as Luria says, they are of the most fundamental importance. So much so that they may demand a new sort of neurology, a 'personalistic', or (as Luria liked to call it) a 'romantic', science; for the physical foundations of the *persona,* the self, are here revealed for our study. Luria thought a science of this kind would be best introduced by a story—a detailed case-history of a man with a profound right hemisphere disturbance, a case-history which would at once be the complement and opposite of 'the man with a shattered world.' In one of his last letters to me he wrote: 'Publish such histories, even if they are just sketches. It is a realm of great wonder.' I must confess to being especially intrigued by these disorders, for they open realms, or promise realms, scarcely imagined before, pointing to an open and more spacious neurology and psychology, excitingly different from the rather rigid and mechanical neurology of the past.

It is, then, less deficits, in the traditional sense, which have engaged my interest than neurological disorders affecting the self. Such disorders may be of many kinds—and may arise from excesses, no less than impairments, of function—and it seems reasonable to consider these two categories separately. But it must be said from the outset that a disease is never a mere loss or excess— that there is always a reaction, on the part of the affected organism or individual, to restore, to replace, to compensate for and to preserve its identity, however

strange the means may be: and to study or influence these means, no less than the primary insult to the nervous system, is an essential part of our role as physicians. This was powerfully stated by Ivy McKenzie:

For what is it that constitutes a 'disease entity' or a 'new disease'? The physician is concerned not, like the naturalist, with a wide range of different organisms theoretically adapted in an average way to an average environment, but with a single organism, the human subject, striving to preserve its identity in adverse circumstances.

This dynamic, this 'striving to preserve identity', however strange the means or effects of such striving, was recognized in psychiatry long ago—and, like so much else, is especially associated with the work of Freud. Thus, the delusions of paranoia were seen by him not as primary but as attempts (however misguided) at restitution, at reconstructing a world reduced by complete chaos. In precisely the same way, Ivy McKenzie wrote:

The pathological physiology of the Parkinsonian syndrome is the study of *an organized chaos,* a chaos induced in the first instance by destruction of important integrations, and reorganized on an unstable basis in the process of rehabilitation.

As *Awakenings* was the study of 'an organized chaos' produced by a single if multiform disease, so what now follows is a series of similar studies of the organized chaoses produced by a great variety of diseases.

In this first section, 'Losses', the most important case, to my mind, is that of a special form of visual agnosia: 'The Man Who Mistook His Wife for a Hat'. I believe it to be of fundamental importance. Such cases constitute a radical challenge to one of the most entrenched axioms or assumptions of classical neurology—in particular, the notion that brain damage, *any* brain damage, reduces or removes the 'abstract and categorical attitude' (in Kurt Goldstein's term), reducing the individual to the emotional and concrete. (A very similar thesis was made by Hughlings Jackson in the 1860s.) Here, in the case of Dr P., we see the very *opposite* of this—a man who has (albeit only in the sphere of the visual) wholly lost the emotional, the concrete, the personal, the 'real' ... and been reduced, as it were, to the abstract and the categorical, with consequences of a particularly preposterous kind. What would Hughlings Jackson and Goldstein have said of *this?* I have often in imagination, asked them to examine Dr P., and then said, 'Gentlemen! What do you say *now?'*

1 The Man Who Mistook His Wife for a Hat

Dr P. was a musician of distinction, well-known for many years as a singer, and then, at the local School of Music, as a teacher. It was here, in relation to his students, that certain strange problems were first observed. Sometimes a student would present himself, and Dr P. would not recognize him; or, specifically, would not recognize his face. The moment the student spoke, he would be recognized by his voice. Such incidents multiplied, causing embarrassment, perplexity, fear—and, sometimes, comedy. For not only did Dr P. increasingly fail to see faces, but he saw faces when there were no faces to see: genially, Magoo-like, when in the street he might pat the heads of water hydrants and parking meters, taking these to be the heads of children; he would amiably address carved knobs on the furniture and be astounded when they did not reply. At first these odd mistakes were laughed off as jokes, not least by Dr P. himself. Had he not always had a quirky sense of humor and been given to Zen-like paradoxes and jests? His musical powers were as dazzling as ever; he did not feel ill—he had never felt better; and the mistakes were so ludicrous—and so ingenious—that they could hardly be serious or betoken anything serious. The notion of there being 'something the matter' did not emerge until some three years later, when diabetes developed. Well aware that diabetes could affect his eyes, Dr P. consulted an ophthalmologist, who took a careful history and examined his eyes closely. 'There's nothing the matter with your eyes,' the doctor concluded. 'But there is trouble with the visual parts of your brain.

You don't need my help, you must see a neurologist.' And so, as a result of this referral, Dr P. came to me.

It was obvious within a few seconds of meeting him that there was no trace of dementia in the ordinary sense. He was a man of great cultivation and charm who talked well and fluently, with imagination and humor. I couldn't think why he had been referred to our clinic.

And yet there *was* something a bit odd. He faced me as he spoke, was oriented towards me, and yet there was something the matter—it was difficult to formulate. He faced me with his *ears,* I came to think, but not with his eyes. These, instead of looking, gazing, at me, 'taking me in', in the normal way, made sudden strange fixations—on my nose, on my right ear, down to my chin, up to my right eye—as if noting (even studying) these individual features, but not seeing my whole face, its changing expressions, 'me', as a whole. I am not sure that I fully realized this at the time—there was just a teasing

strangeness, some failure in the normal interplay of gaze and expression. He saw me, he *scanned* me, and yet ...

'What seems to be the matter?' I asked him at length.

'Nothing that I know of,' he replied with a smile, 'but people seem to think there's something wrong with my eyes.'

'But *you* don't recognize any visual problems?'

'No, not directly, but I occasionally make mistakes.'

I left the room briefly to talk to his wife. When I came back, Dr P. was sitting placidly by the window, attentive, listening rather than looking out. 'Traffic,' he said, 'street sounds, distant trains— they make a sort of symphony, do they not? You know Honegger's *Pacific 234?'*

What a lovely man, I thought to myself. How can there be anything seriously the matter? Would he permit me to examine him?

'Yes, of course, Dr Sacks.'

I stilled my disquiet, his perhaps, too, in the soothing routine of a neurological exam—muscle strength, coordination, reflexes, tone. ... It was while examining his reflexes—a trifle abnormal on the left side—that the first bizarre experience occurred. I had taken off his left shoe and scratched the sole of his foot with a key—a frivolous-seeming but essential test of a reflex—and then, excusing myself to screw my ophthalmoscope together, left him to put on the shoe himself. To my surprise, a minute later, he had not done this.

'Can I help?' I asked.

'Help what? Help whom?'

'Help you put on your shoe.'

'Ach,' he said, 'I had forgotten the shoe,' adding, sotto *voce,* 'The shoe? The shoe?' He seemed baffled.

'Your shoe,' I repeated. 'Perhaps you'd put it on.'

He continued to look downwards, though not at the shoe, with an intense but misplaced concentration. Finally his gaze settled on his foot: 'That is my shoe, yes?'

Did I mis-hear? Did he mis-see?

'My eyes,' he explained, and put a hand to his foot. '*This* is my shoe, no?'

'No, it is not. That is your foot. *There* is your shoe.'

'Ah! I thought that was my foot.'

Was he joking? Was he mad? Was he blind? If this was one of his 'strange mistakes', it was the strangest mistake I had ever come across.

I helped him on with his shoe (his foot), to avoid further

complication. Dr P. himself seemed untroubled, indifferent, maybe amused. I resumed my examination. His visual acuity was good: he had no difficulty seeing a pin on the floor, though sometimes he missed it if it was placed to his left.

He saw all right, but what did he see? I opened out a copy of the *National Geographic Magazine* and asked him to describe some pictures in it.

His responses here were very curious. His eyes would dart from one thing to another, picking up tiny features, individual features, as they had done with my face. A striking brightness, a color, a shape would arrest his attention and elicit comment—but in no case did he get the scene-as-a-whole. He failed to see the whole, seeing only details, which he spotted like blips on a radar screen. He never entered into relation with the picture as a whole—never faced, so to speak, *its* physiognomy. He had no sense whatever of a landscape or scene.

I showed him the cover, an unbroken expanse of Sahara dunes.

'What do you see here?' I asked.

'I see a river,' he said. 'And a little guest-house with its terrace on the water. People are dining out on the terrace. I see colored parasols here and there.' He was looking, if it was 'looking', right off the cover into midair and confabulating nonexistent features, as if the absence of features in the actual picture had driven him to imagine the river and the terrace and the colored parasols.

I must have looked aghast, but he seemed to think he had done rather well. There was a hint of a smile on his face. He also appeared to have decided that the examination was over and started to look around for his hat. He reached out his hand and took hold of his wife's head, tried to lift it off, to put it on. He had apparently mistaken his wife for a hat! His wife looked as if she was used to such things.

I could make no sense of what had occurred in terms of conventional neurology (or neuropsychology). In some ways he seemed perfectly preserved, and in others absolutely, incomprehensibly devastated. How could he, on the one hand, mistake his wife for a hat and, on the other, function, as apparently he still did, as a teacher at the Music School?

I had to think, to see him again—and to see him in his own familiar habitat, at home.

A few days later I called on Dr P. and his wife at home, with the score of the *Dichterliebe* in my briefcase (I knew he liked Schumann), and a variety of odd objects for the testing of perception. Mrs P.

showed me into a lofty apartment, which recalled fin-de-siecle Berlin. A magnificent old Bosendorfer stood in state in the centre of the room, and all around it were music stands, instruments, scores.... There were books, there were paintings, but the music was central. Dr P. came in, a little bowed, and, distracted, advanced with outstretched hand to the grandfather clock, but, hearing my voice, corrected himself, and shook hands with me. We exchanged greetings and chatted a little of current concerts and performances. Diffidently, I asked him if he would sing.

The *Dichterliebe!'* he exclaimed. 'But I can no longer read music. You will play them, yes?'

I said I would try. On that wonderful old piano even my playing sounded right, and Dr P. was an aged but infinitely mellow Fischer-Dieskau, combining a perfect ear and voice with the most incisive musical intelligence. It was clear that the Music School was not keeping him on out of charity.

Dr P. 's temporal lobes were obviously intact: he had a wonderful musical cortex. What, I wondered, was going on in his parietal and occipital lobes, especially in those areas where visual processing occurred? I carry the Platonic solids in my neurological kit and decided to start with these.

'What is this?' I asked, drawing out the first one.

'A cube, of course.'

'Now this?' I asked, brandishing another.

He asked if he might examine it, which he did swiftly and systematically: 'A dodecahedron, of course. And don't bother with the others—I'll get the icosahedron, too.'

Abstract shapes clearly presented no problems. What about faces? I took out a pack of cards. All of these he identified instantly, including the jacks, queens, kings, and the joker. But these, after all, are stylized designs, and it was impossible to tell whether he saw faces or merely patterns. I decided I would show him a volume of cartoons which I had in my briefcase. Here, again, for the most part, he did well. Churchill's cigar, Schnozzle's nose: as soon as he had picked out a key feature he could identify the face. But cartoons, again, are formal and schematic. It remained to be seen how he would do with real faces, realistically represented.

I turned on the television, keeping the sound off, and found an early Bette Davis film. A love scene was in progress. Dr P. failed to identify the actress—but this could have been because she had never entered his world. What was more striking was that he failed to identify the

expressions on her face or her partner's, though in the course of a single torrid scene these passed from sultry yearning through passion, surprise, disgust, and fury to a melting reconciliation. Dr P. could make nothing of any of this. He was very unclear as to what was going on, or who was who or even what sex they were. His comments on the scene were positively Martian.

It was just possible that some of his difficulties were associated with the unreality of a celluloid, Hollywood world; and it occurred to me that he might be more successful in identifying faces from his own life. On the walls of the apartment there were photographs of his family, his colleagues, his pupils, himself. I gathered a pile of these together and, with some misgivings, presented them to him. What had been funny, or farcical, in relation to the movie, was tragic in relation to real life. By and large, he recognized nobody: neither his family, nor his colleagues, nor his pupils, nor himself. He recognized a portrait of Einstein because he picked up the characteristic hair and moustache; and the same thing happened with one or two other people. 'Ach, Paul!' he said, when shown a portrait of his brother. 'That square jaw, those big teeth— I would know Paul anywhere!' But was it Paul he recognized, or one or two of his features, on the basis of which he could make a reasonable guess as to the subject's identity? In the absence of obvious 'markers', he was utterly lost. But it was not merely the cognition, the *gnosis,* at fault; there was something radically wrong with the whole way he proceeded. For he approached these faces— even of those near and dear—as if they were abstract puzzles or tests. He did not relate to them, he did not behold. No face was familiar to him, seen as a 'thou', being just identified as a set of features, an 'it'. Thus, there was formal, but no trace of personal, gnosis. And with this went his indifference, or blindness, to expression. A face, to us, is a person looking out—we see, as it were, the person through his *persona,* his face. But for Dr P. there was no *persona* in this sense—no outward *persona,* and no person within.

I had stopped at a florist on my way to his apartment and bought myself an extravagant red rose for my buttonhole. Now I removed this and handed it to him. He took it like a botanist or morphologist given a specimen, not like a person given a flower.

About six inches in length,' he commented. 'A convoluted red form with a linear green attachment.'

'Yes,' I said encouragingly, 'and what do you think it *is,* Dr P.?'

'Not easy to say.' He seemed perplexed. 'It lacks the simple

symmetry of the Platonic solids, although it may have a higher symmetry of its own. ... I think this could be an inflorescence or flower.'

'Could be?' I queried.

'Could be,' he confirmed.

'Smell it,' I suggested, and he again looked somewhat puzzled, as if I had asked him to smell a higher symmetry. But he complied courteously, and took it to his nose. Now, suddenly, he came to life.

'Beautiful!' he exclaimed. 'An early rose. What a heavenly smell!' He started to hum *'Die Rose, die Lillie* ...' Reality, it seemed, might be conveyed by smell, not by sight.

I tried one final test. It was still a cold day, in early spring, and I had thrown my coat and gloves on the sofa.

'What is this?' I asked, holding up a glove.

'May I examine it?' he asked, and, taking it from me, he proceeded to examine it as he had examined the geometrical shapes.

'A continuous surface,' he announced at last, 'infolded on itself. It appears to have'—he hesitated—'five outpouchings, if this is the word.'

'Yes,' I said cautiously. You have given me a description. Now tell me what it is.'

'A container of some sort?'

Yes,' I said, 'and what would it contain?'

'It would contain its contents!' said Dr P., with a laugh. 'There are many possibilities. It could be a change purse, for example, for coins of five sizes. It could ...'

I interrupted the barmy flow. 'Does it not look familiar? Do you think it might contain, might fit, a part of your body?'

No light of recognition dawned on his face.(*Later, by accident, he got it on, and exclaimed, 'My God, it's a glove!' This was reminiscent of Kurt Goldstein's patient 'Lanuti', who could only recognize objects by trying to use them in action.*)

No child would have the power to see and speak of 'a continuous surface ... infolded on itself,' but any child, any infant, would immediately know a glove as a glove, see it as familiar, as going with a hand. Dr P. didn't. He saw nothing as familiar. Visually, he was lost in a world of lifeless abstractions. Indeed, he did not have a real visual world, as he did not have a real visual self. He could speak about things, but did not see them face-to-face. Hughlings Jackson, discussing patients with aphasia and left hemisphere lesions, says they have lost 'abstract' and 'propositional' thought—and compares them

with dogs (or, rather, he compares dogs to patients with aphasia). Dr P., on the other hand, functioned precisely as a machine functions. It wasn't merely that he displayed the same indifference to the visual world as a computer but—even more strikingly—he construed the world as a computer construes it, by means of key features and schematic relationships. The scheme might be identified—in an 'identi-kit' way—without the reality being grasped at all.

The testing I had done so far told me nothing about Dr P.'s inner world. Was it possible that his visual memory and imagination were still intact? I asked him to imagine entering one of our local squares from the north side, to walk through it, in imagination or in memory, and tell me the buildings he might pass as he walked. He listed the buildings on his right side, but none of those on his left. I then asked him to imagine entering the square from the south. Again he mentioned only those buildings that were on the right side, although these were the very buildings he had omitted before. Those he had 'seen' internally before were not mentioned now; presumably, they were no longer 'seen'. It was evident that his difficulties with leftness, his visual field deficits, were as much internal as external, bisecting his visual memory and imagination.

What, at a higher level, of his internal visualization? Thinking of the almost hallucinatory intensity with which Tolstoy visualizes and animates his characters, I questioned Dr P. about *Anna Karenina.* He could remember incidents without difficulty, had an undiminished grasp of the plot, but completely omitted visual characteristics, visual narrative, and scenes. He remembered the words of the characters but not their faces; and though, when asked, he could quote, with his remarkable and almost verbatim memory, the original visual descriptions, these were, it became apparent, quite empty for him and lacked sensorial, imaginal, or emotional reality. Thus, there was an internal agnosia as well (*I have often wondered about Helen Keller's visual descriptions, whether these, for all their eloquence, are somehow empty as well? Or whether, by the transference of images from the tactile to the visual, or, yet more extraordinarily, from the verbal and the metaphorical to the sensorial and the visual, she did achieve a power of visual imagery, even though her visual cortex had never been stimulated, directly, by the eyes? But in Dr P.'s case it is precisely the cortex that was damaged, the organic prerequisite of all pictorial imagery. Interestingly and typically he no longer dreamed pictorally—the 'message' of the dream being conveyed in nonvisual terms.*)

But this was only the case, it became clear, with certain sorts of visualization. The visualization of faces and scenes, of visual narrative and drama—this was profoundly impaired, almost absent. But the visualization of *schemata* was preserved, perhaps enhanced. Thus, when I engaged him in a game of mental chess, he had no difficulty visualizing the chessboard or the moves— indeed, no difficulty in beating me soundly.

Luria said of Zazetsky that he had entirely lost his capacity to play games but that his 'vivid imagination' was unimpaired. Zazetsky and Dr P. lived in worlds which were mirror images of each other. But the saddest difference between them was that Zazetsky, as Luria said, 'fought to regain his lost faculties with the indomitable tenacity of the damned,' whereas Dr P. was not fighting, did not know what was lost, did not indeed know that anything was lost. But who was more tragic, or who was more damned— the man who knew it, or the man who did not?

When the examination was over, Mrs P. called us to the table, where there was coffee and a delicious spread of little cakes. Hungrily, hummingly, Dr P. started on the cakes. Swiftly, fluently, unthinkingly, melodiously, he pulled the plates towards him and took this and that in a great gurgling stream, an edible song of food, until, suddenly, there came an interruption: a loud, peremptory rat-tat-tat at the door. Startled, taken aback, arrested by the interruption, Dr P. stopped eating and sat frozen, motionless, at the table, with an indifferent, blind bewilderment on his face. He saw, but no longer saw, the table; no longer perceived it as a table laden with cakes. His wife poured him some coffee: the smell titillated his nose and brought him back to reality. The melody of eating resumed.

How does he do anything? I wondered to myself. What happens when he's dressing, goes to the lavatory, has a bath? I followed his wife into the kitchen and asked her how, for instance, he managed to dress himself. 'It's just like the eating,' she explained. 'I put his usual clothes out, in all the usual places, and he dresses without difficulty, singing to himself. He does everything singing to himself. But if he is interrupted and loses the thread, he comes to a complete stop, doesn't know his clothes—or his own body. He sings all the time—eating songs, dressing songs, bathing songs, everything. He can't do anything unless he makes it a song.'

While we were talking my attention was caught by the pictures on

the walls.

'Yes,' Mrs P. said, 'he was a gifted painter as well as a singer. The School exhibited his pictures every year.'

I strolled past them curiously—they were in chronological order. All his earlier work was naturalistic and realistic, with vivid mood and atmosphere, but finely detailed and concrete. Then, years later, they became less vivid, less concrete, less realistic and naturalistic, but far more abstract, even geometrical and cubist. Finally, in the last paintings, the canvasses became nonsense, or nonsense to me—mere chaotic lines and blotches of paint. I commented on this to Mrs P.

'Ach, you doctors, you're such Philistines!' she exclaimed. 'Can you not see *artistic development*—how he renounced the realism of his earlier years, and advanced into abstract, nonrepresentational art?'

'No, that's not it,' I said to myself (but forbore to say it to poor Mrs P.). He had indeed moved from realism to nonrepresentation to the abstract, yet this was not the artist, but the pathology, advancing—advancing towards a profound visual agnosia, in which all powers of representation and imagery, all sense of the concrete, all sense of reality, were being destroyed. This wall of paintings was a tragic pathological exhibit, which belonged to neurology, not art.

And yet, I wondered, was she not partly right? For there is often a struggle, and sometimes, even more interestingly, a collusion between the powers of pathology and creation. Perhaps, in his cubist period, there might have been both artistic and pathological development, colluding to engender an original form; for as he lost the concrete, so he might have gained in the abstract, developing a greater sensitivity to all the structural elements of line, boundary, contour—an almost Picasso-like power to see, and equally depict, those abstract organizations embedded in, and normally lost in, the concrete.... Though in the final pictures, I feared, there was only chaos and agnosia.

We returned to the great music room, with the Bosendorfer in the centre, and Dr P. humming the last torte.

'Well, Dr Sacks,' he said to me. 'You find me an interesting case, I perceive. Can you tell me what you find wrong, make recommendations?'

'I can't tell you what I find wrong,' I replied, 'but I'll say what I find right. You are a wonderful musician, and music is your life. What I would prescribe, in a case such as yours, is a life which consists entirely of music. Music has been the centre, now make it the whole, of your

life.'

This was four years ago—I never saw him again, but I often wondered about how he apprehended the world, given his strange loss of image, visuality, and the perfect preservation of a great musicality. I think that music, for him, had taken the place of image. He had no body-image, he had body-music: this is why he could move and act as fluently as he did, but came to a total confused stop if the 'inner music' stopped. And equally with the outside, the world ... (*Thus, as I learned later from his wife, though he could not recognize his students if they sat still, if they were merely 'images', he might suddenly recognize them if they moved. 'That's Karl,' he would cry. 'I know his movements, his body-music'*)

In *The World as Representation and Will,* Schopenhauer speaks of music as 'pure will'. How fascinated he would have been by Dr P., a man who had wholly lost the world as representation, but wholly preserved it as music or will.

And this, mercifully, held to the end—for despite the gradual advance of his disease (a massive tumor or degenerative process in the visual parts of his brain) Dr P. lived and taught music to the last days of his life.

Postscript

How should one interpret Dr P.'s peculiar inability to interpret, to judge, a glove as a glove? Manifestly, here, he could not make a cognitive judgment, though he was prolific in the production of cognitive hypotheses. A judgment is intuitive, personal, comprehensive, and concrete—we 'see' how things stand, in relation to one another and oneself. It was precisely this setting, this relating, that Dr P. lacked (though his judging, in all other spheres, was prompt and normal). Was this due to lack of visual information, or faulty processing of visual information? (This would be the explanation given by a classical, schematic neurology.) Or was there something amiss in Dr P.'s attitude, so that he could not relate what he saw to himself?

These explanations, or modes of explanation, are not mutually exclusive—being in different modes they could coexist and both be true. And this is acknowledged, implicitly or explicitly, in classical neurology: implicitly, by Macrae, when he finds the explanation of defective schemata, or defective visual processing and integration, inadequate; explicitly, by Goldstein, when he speaks of 'abstract attitude'. But abstract attitude, which allows 'categorization', also

misses the mark with Dr P.—and, perhaps, with the concept of 'judgment' in general. For Dr P. *had* abstract attitude— indeed, nothing else. And it was precisely this, his absurd abstractness of attitude—absurd because unleavened with anything else—which rendered him incapable of perceiving identity, or particulars, rendered him incapable of judgment.

Neurology and psychology, curiously, though they talk of everything else, almost never talk of 'judgment'—and yet it is precisely the downfall of judgment (whether in specific realms, as with Dr P., or more generally, as in patients with Korsakov's or frontal-lobe syndromes—see below, Chapters Twelve and Thirteen) which constitutes the essence of so many neuropsychological disorders.

Judgment and identity may be casualties—but neuropsychology never speaks of them.

And yet, whether in a philosophic sense (Kant's sense), or an empirical and evolutionary sense, judgment is the most important faculty we have. An animal, or a man, may get on very well without 'abstract attitude' but will speedily perish if deprived of judgment. Judgment must be the *first* faculty of higher life or mind—yet it is ignored, or misinterpreted, by classical (computational) neurology. And if we wonder how such an absurdity can arise, we find it in the assumptions, or the evolution, of neurology itself. For classical neurology (like classical physics) has always been mechanical—from Hughlings Jackson's mechanical analogies to the computer analogies of today.

Of course, the brain *is* a machine and a computer—everything in classical neurology is correct. But our mental processes, which constitute our being and life, are not just abstract and mechanical, but personal, as well—and, as such, involve not just classifying and categorizing, but continual judging and feeling also. If this is missing, we become computer-like, as Dr P. was. And, by the same token, if we delete feeling and judging, the personal, from the cognitive sciences, we reduce *them* to something as defective as Dr P.—and we reduce *our* apprehension of the concrete and real.

By a sort of comic and awful analogy, our current cognitive neurology and psychology resemble nothing so much as poor Dr P.! We need the concrete and real, as he did; and we fail to see this, as he failed to see it. Our cognitive sciences are themselves suffering from an agnosia essentially similar to Dr P.'s. Dr P. may therefore serve as a warning and parable—of what happens to a science which eschews the

judgmental, the particular, the personal, and becomes entirely abstract and computational.

It was always a matter of great regret to me that, owing to circumstances beyond my control, I was not able to follow his case further, either in the sort of observations and investigations described, or in ascertaining the actual disease pathology.

One always fears that a case is 'unique', especially if it has such extraordinary features as those of Dr P. It was, therefore, with a sense of great interest and delight, not unmixed with relief, that I found, quite by chance—looking through the periodical *Brain* for 1956—a detailed description of an almost comically similar case, similar (indeed identical) neuropsychologically and phenomenologically, though the underlying pathology (an acute head injury) and all personal circumstances were wholly different. The authors speak of their case as 'unique in the documented history of this disorder'—and evidently experienced, as I did, amazement at their own findings. *The interested reader is referred to the original paper, Macrae and Trolle (1956), of which I here subjoin a brief paraphrase, with quotations from the original. Only since the completion of this book have I found that there is, in fact, a rather extensive literature on visual agnosia in general, and prosopagnosia in particular. In particular I had the great pleasure recently of meeting Dr Andrew Kertesz, who has himself published some extremely detailed studies of patients with such agnosias (see, for example, his paper on visual agnosia, Kertesz 1979). Dr Kertesz mentioned to me a case known to him of a farmer who had developed prosopagnosia and in consequence could no longer distinguish (the faces of) his cows, and of another such patient, an attendant in a Natural History Museum, who mistook his own reflection for the diorama of an ape. As with Dr P., and as with Macrae and Trolle's patient, it is especially the animate which is so absurdly misperceived. The most important studies of such agnosias, and of visual processing in general, are now being undertaken by A. R. and H. Damasio (see article in Mesulam [1985], pp. 259-288; or see p. 79 below).*

Their patient was a young man of 32, who, following a severe automobile accident, with unconsciousness for three weeks, '... complained, exclusively, of an inability to recognize faces, even those of his wife and children'. Not a single face was 'familiar' to him, but there were three he could identify; these were workmates: one with an eye-blinking tic, one with a large mole on his cheek, and a third 'because he was so tall and thin that no one else was like him'. Each of

these, Macrae and Trolle bring out, was 'recognized solely by the single prominent feature mentioned'. In general (like Dr P.) he recognized familiars only by their voices.

He had difficulty even recognizing himself in a mirror, as Macrae and Trolle describe in detail: 'In the early convalescent phase he frequently, especially when shaving, questioned whether the face gazing at him was really his own, and even though he knew it could physically be none other, on several occasions grimaced or stuck out his tongue "just to make sure." By carefully studying his face in the mirror he slowly began to recognize it, but "not in a flash" as in the past—he relied on the hair and facial outline, and on two small moles on his left cheek.'

In general he could not recognize objects 'at a glance', but would have to seek out, and guess from, one or two features— occasionally his guesses were absurdly wrong. In particular, the authors note, there was difficulty with the *animate.*

On the other hand, simple schematic objects—scissors, watch, key, etc.—presented no difficulties. Macrae and Trolle also note that: 'His *topographical memory* was strange: the seeming paradox existed that he could find his way from home to hospital and around the hospital, but yet could not name streets *en route* [unlike Dr P., he also had some aphasia] or appear to visualize the topography.'

It was also evident that visual memories of people, even from long before the accident, were severely impaired—there was memory of conduct, or perhaps a mannerism, but not of visual appearance or face. Similarly, it appeared, when he was questioned closely, that he no longer had visual images in his *dreams.* Thus, as with Dr P., it was not just visual perception, but visual imagination and memory, the fundamental powers of visual representation, which were essentially damaged in this patient—at least those powers insofar as they pertained to the personal, the familiar, the concrete.

A final, humorous point. Where Dr P. might mistake his wife for a hat, Macrae's patient, also unable to recognize his wife, needed her to identify herself by a visual *marker,* by '... a conspicuous article of clothing, such as a large hat'.

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