PART FOUR  THE WORLD OF THE SIMPLE

Introduction

When I started working with retardates several years ago, I thought it would be dismal, and wrote this to Luria. To my surprise, he replied in the most positive terms, and said that there were no patients, in general, more ‘dear’ to him, and that he counted his hours and years at the Institute of Defectology among the most moving and interesting of his entire professional life. He expresses a similar sentiment in the preface to the first of his clinical biographies (Speech and the Development of Mental Processes in the Child, Eng. tr. 1959): ‘If an author has the right to express feelings about his own work, I must note the warm sense with which I always turn to the material published in this small book.’

What is this ‘warm sense’ of which Luria speaks? It is clearly the expression of something emotional and personal—which would not be possible if the defectives did not ‘respond’, did not themselves possess very real sensibilities, emotional and personal potentials, whatever their (intellectual) defects. But it is more. It is an expression of scientific interest—of something that Luria considered of quite peculiar scientific interest. What could this be? Something other than ‘defects’ and ‘defectology’, surely, which are of rather limited interest in themselves. What is it, then, that is especially interesting in the simple?

It has to do with qualities of mind which are preserved, even enhanced, so that, though ‘mentally defective’ in some ways, they may be mentally interesting, even mentally complete, in others. Qualities of mind other than the conceptual—this is what we may explore with peculiar clarity in the simple mind (as we may also in the minds of children and ‘savages’—though, as Clifford Geertz repeatedly emphasizes, these categories must never be equated: savages are neither simple nor children; children have no savage culture; and the simple are neither savages nor children). Yet there are important kinships—and all that Piaget has opened out for us in the minds of children, and Levi-Strauss in the ‘savage mind’, awaits us, in a different form, in the mind and world of the simple. (All of Luria’s early work was done in these three allied domains, his field-work with children in primitive communities in Central Asia, and his studies in the Institute of
Defectology. Together these launched his lifelong exploration of human imagination.

What awaits our study is equally pleasing to the heart and mind, and, as such, especially incites the impulse to Luria’s ‘romantic science’.

What is this quality of mind, this disposition, which characterizes the simple, and gives them their poignant innocence, transparency, completeness and dignity—a quality so distinctive we must speak of the ‘world’ of the simple (as we speak of the ‘world’ of the child or the savage)?

If we are to use a single word here, it would have to be ‘concreteness’—their world is vivid, intense, detailed, yet simple, precisely because it is concrete: neither complicated, diluted, nor unified, by abstraction.

By a sort of inversion, or subversion, of the natural order of things, concreteness is often seen by neurologists as a wretched thing, beneath consideration, incoherent, regressed. Thus for Kurt Goldstein, the greatest systematiser of his generation, the mind, man’s glory, lies wholly in the abstract and categorical, and the effect of brain damage, any and all brain damage, is to cast him out from this high realm into the almost subhuman swamplands of the concrete. If a man loses the ‘abstract-categorical attitude’ (Goldstein), or ‘prepositional thought’ (Hughlings Jackson), what remains is subhuman, of no moment or interest.

I call this an inversion because the concrete is elemental—it is what makes reality ‘real’, alive, personal and meaningful. All of this is lost if the concrete is lost—as we saw in the case of the almost-Martian Dr P., ‘the man who mistook his wife for a hat’, who fell (in an un-Goldsteinian way) from the concrete to the abstract.

Much easier to comprehend, and altogether more natural, is the idea of the preservation of the concrete in brain damage—not regression to it, but preservation of it, so that the essential personality and identity and humanity, the being of the hurt creature, is preserved.

This is what we see in Zazetsky—‘the man with a shattered world’—he remains a man, quintessentially a man, with all the moral weight and rich imagination of a man, despite the devastation of his abstract and propositional powers. Here Luria, while seeming to be supporting the formulations of Hughlings Jackson and Goldstein, is, at the same time, turning their significance upside down. Zazetsky is no feeble Jacksonian or Goldsteinian relic, but a man in his full manhood, a man
with his emotions and imagination wholly preserved, perhaps enhanced. His world is not ‘shattered’, despite the book’s title—it lacks unifying abstractions, but is experienced as an extraordinarily rich, deep and concrete reality.

I believe all this to be true of the simple also—the more so as, having been simple from the start, they have never known, been seduced by, the abstract, but have always experienced reality direct and unmediated, with an elemental and, at times, overwhelming intensity.

We find ourselves entering a realm of fascination and paradox, all of which centers on the ambiguity of the ‘concrete’. In particular, as physicians, as therapists, as teachers, as scientists, we are invited, indeed compelled, towards an exploration of the concrete. This is Luria’s ‘romantic science’. Both of Luria’s great clinical biographies, or ‘novels’, may indeed be seen as explorations of the concrete: its preservation, in the service of reality, in the braindamaged Zazetsky; its exaggeration, at the expense of reality, in the ‘supermind’ of the Mnemonist.

Classical science has no use for the concrete—it is equated with the trivial in neurology and psychiatry. It needs a ‘romantic’ science to pay it its full due—to appreciate its extraordinary powers ... and dangers: and in the simple we are confronted with the concrete head-on, the concrete pure and simple, in unreserved intensity.

The concrete can open doors, and it can close them too. It can constitute the portal to sensibility, imagination, depth. Or it can confine the possessor (or the possessed) to meaningless particulars. We see both of these potentials, as it were amplified, in the simple.

Enhanced powers of concrete imagery and memory, Nature’s compensation for defectiveness in the conceptual and abstract, can tend in quite opposite directions: towards an obsessive preoccupation with particulars, the development of an eidetic imagery and memory, and the mentality of the Performer or ‘whiz kid’ (as occurred with the Mnemonist, and in ancient times, with over-cultivation of the concrete ‘art of memory’): we see tendencies to this in Martin A. (Chapter Twenty-two), in Jose (Chapter Twenty-four), and especially the Twins (Chapter Twenty-three), exaggerated, especially in the Twins, by the demands of public performance, coupled with their own obsessionalism and exhibitionism.

But of much greater interest, much more human, much more moving, much more ‘real’—yet scarcely even recognized in scientific
studies of the simple (though immediately seen by sympathetic parents and teachers)—is the proper use and development of the concrete.

The concrete, equally, may become a vehicle of mystery, beauty and depth, a path into the emotions, the imagination, the spirit—fully as much as any abstract conception (perhaps indeed more, as Gershom Scholem (1965) has argued in his contrasts of the conceptual and the symbolic, or Jerome Bruner (1984) in his contrast of the ‘paradigmatic’ and the ‘narrative’). The concrete is readily imbued with feeling and meaning—more readily, perhaps, than any abstract conception. It readily moves into the aesthetic, the dramatic, the comic, the symbolic, the whole wide deep world of art and spirit. Conceptually, then, mental defectives may be cripples—but in their powers of concrete and symbolic apprehension they may be fully the equal of any ‘normal’ individual. (This is science, this is romance too ... ) No one has expressed this more beautifully than Kierkegaard, in the words he wrote on his deathbed. ‘Thou plain man!’ (he writes, and I paraphrase slightly). ‘The symbolism of the Scriptures is something infinitely high ... but it is not “high” in a sense that has anything to do with intellectual elevation, or with the intellectual differences between man and man ... No, it is for all ... for all is this infinite height attainable.’

A man may be very ‘low’ intellectually—unable to put a key to a door, much less understand the Newtonian laws of motion, wholly unable to comprehend the world as concepts, and yet fully able, and indeed gifted, in understanding the world as concrete-ness, as symbols. This is the other side, the almost sublime other side, of the singular creatures, the gifted simpletons, Martin, Jose, and the Twins.

Yet, it may be said, they are extraordinary and atypical. I therefore start this final section with Rebecca, a wholly ‘unremarkable’ young woman, a simpleton, with whom I worked twelve years ago. I remember her warmly.
Rebecca

Rebecca was no child when she was referred to our clinic. She was nineteen, but, as her grandmother said, ‘just like a child in some ways’. She could not find her way around the block, she could not confidently open a door with a key (she could never ‘see’ how the key went, and never seemed to learn). She had left/right confusion, she sometimes put on her clothes the wrong way—inside out, back-to-front, without appearing to notice, or, if she noticed, without being able to get them right. She might spend hours jamming a hand or foot into the wrong glove or shoe—she seemed, as her grandmother said, to have ‘no sense of space’. She was clumsy and ill-coordinated in all her movements—a ‘klutz’, one report said, a ‘motor moron’ another (although when she danced, all her clumsiness disappeared).

Rebecca had a partial cleft palate, which caused a whistling in her speech; short, stumpy fingers, with blunt, deformed nails; and a high, degenerative myopia requiring very thick spectacles—all stigmata of the same congenital condition which had caused her cerebral and mental defects. She was painfully shy and withdrawn, feeling that she was, and had always been, a ‘figure of fun’.

But she was capable of warm, deep, even passionate attachments. She had a deep love for her grandmother, who had brought her up since she was three (when she was orphaned by the death of both parents). She was very fond of nature, and, if she was taken to the city parks and botanic gardens, spent many happy hours there. She was very fond too of stories, though she never learned to read (despite assiduous, and even frantic, attempts), and would implore her grandmother or others to read to her. ‘She has a hunger for stories,’ her grandmother said; and fortunately her grandmother loved reading stories and had a fine reading voice which kept Rebecca entranced. And not just stories—poetry too. This seemed a deep need or hunger in Rebecca—a necessary form of nourishment, of reality, for her mind. Nature was beautiful, but mute. It was not enough. She needed the world re-presented to her in verbal images, in language, and seemed to have little difficulty following the metaphors and symbols of even quite deep poems, in striking contrast to her incapacity with simple propositions and instructions. The language of feeling, of the concrete, of image and symbol, formed a world she loved and, to a remarkable extent, could enter. Though conceptually (and ‘propositionally’) inept, she was at home with poetic language, and was herself, in a stumbling,
touching way, a sort of ‘primitive’, natural poet. Metaphors, figures of speech, rather striking similitudes, would come naturally to her, though unpredictably, as sudden poetic ejaculations or allusions. Her grandmother was devout, in a quiet way, and this also was true of Rebecca: she loved the lighting of the Sabbath candles, the benisons and orisons which thread the Jewish day; she loved going to the synagogue, where she too was loved (and seen as a child of God, a sort of innocent, a holy fool); and she fully understood the liturgy, the chants, the prayers, rites and symbols of which the Orthodox service consists. All this was possible for her, accessible to her, loved by her, despite gross perceptual and spatio-temporal problems, and gross impairments in every schematic capacity—she could not count change, the simplest calculations defeated her, she could never learn to read or write, and she would average 60 or less in IQ tests (though doing notably better on the verbal than the performance parts of the test). Thus she was a ‘moron’, a ‘fool’, a ‘booby’, or had so appeared, and so been called, throughout her whole life, but one with an unexpected, strangely moving, poetic power. Superficially she was a mass of handicaps and incapacities, with the intense frustrations and anxieties attendant on these; at this level she was, and felt herself to be, a mental cripple—beneath the effortless skills, the happy capacities, of others; but at some deeper level there was no sense of handicap or incapacity, but a feeling of calm and completeness, of being fully alive, of being a soul, deep and high, and equal to all others. Intellectually, then, Rebecca felt a cripple; spiritually she felt herself a full and complete being.

When I first saw her—clumsy, uncouth, all-of-a-fumble—I saw her merely, or wholly, as a casualty, a broken creature, whose neurological impairments I could pick out and dissect with precision: a multitude of apraxias and agnosias, a mass of sensorimotor impairments and breakdowns, limitations of intellectual schemata and concepts similar (by Piaget’s criteria) to those of a child of eight. A poor thing, I said to myself, with perhaps a ‘splinter skill’, a freak gift, of speech; a mere mosaic of higher cortical functions, Piagetian schemata—most impaired.

The next time I saw her, it was all very different. I didn’t have her in a test situation, ‘evaluating’ her in a clinic. I wandered outside—it was a lovely spring day—with a few minutes in hand before the clinic started, and there I saw Rebecca sitting on a bench, gazing at the April foliage quietly, with obvious delight. Her posture had none of the clumsiness which had so impressed me before. Sitting there, in a light
dress, her face calm and slightly smiling, she suddenly brought to mind one of Chekov’s young women—Irene, Anya, Sonya, Nina—seen against the backdrop of a Chekovian cherry orchard. She could have been any young woman enjoying a beautiful spring day. This was my human, as opposed to my neurological, vision.

As I approached, she heard my footsteps and turned, gave me a broad smile, and wordlessly gestured. ‘Look at the world,’ she seemed to say. ‘How beautiful it is.’ And then there came out, in Jacksonian spurts, odd, sudden, poetic ejaculations: ‘spring’, ‘birth’, ‘growing’, ‘stirring’, ‘coming to life’, ‘seasons’, ‘everything in its time’. I found myself thinking of Ecclesiastes: ‘To everything there is a season, and a time to every purpose under the heaven. A time to be born, and a time to die; a time to plant, and a time ... ‘ This was what Rebecca, in her disjointed fashion, was ejaculating—a vision of seasons, of times, like that of the Preacher. ‘She is an idiot Ecclesiastes,’ I said to myself. And in this phrase, my two visions of her—as idiot and as symbolist—met, collided and fused. She had done appallingly in the testing—which, in a sense, was designed, like all neurological and psychological testing, not merely to uncover, to bring out deficits, but to decompose her into functions and deficits. She had come apart, horribly, in formal testing, but now she was mysteriously ‘together’ and composed.

Why was she so decomposed before, how could she be so re-composed now? I had the strongest feeling of two wholly different modes of thought, or of organization, or of being. The first schematic—pattern-seeing, problem-solving—this is what had been tested, and where she had been found so defective, so disastrously wanting. But the tests had given no inkling of anything but the deficits, of anything, so to speak, beyond her deficits.

They had given me no hint of her positive powers, her ability to perceive the real world—the world of nature, and perhaps of the imagination—as a coherent, intelligible, poetic whole: her ability to see this, think this, and (when she could) live this; they had given me no intimation of her inner world, which clearly was composed and coherent, and approached as something other than a set of problems or tasks.

But what was the composing principle which could allow her composure (clearly it was something other than schematic)? I found myself thinking of her fondness for tales, for narrative composition and coherence. Is it possible, I wondered, that this being before me—at once a charming girl, and a moron, a cognitive mishap—can use a
narrative (or dramatic) mode to compose and integrate a coherent world, in place of the schematic mode, which, in her, is so defective that it simply doesn’t work? And as I thought, I remembered her dancing, and how this could organize her otherwise ill-knit and clumsy movements.

Our tests, our approaches, I thought, as I watched her on the bench—enjoying not just a simple but a sacred view of nature—our approach, our ‘evaluations’, are ridiculously inadequate. They only show us deficits, they do not show us powers; they only show us puzzles and schemata, when we need to see music, narrative, play, a being conducting itself spontaneously in its own natural way.

Rebecca, I felt, was complete and intact as ‘narrative’ being, in conditions which allowed her to organize herself in a narrative way; and this was something very important to know, for it allowed one to see her, and her potential, in a quite different fashion from that imposed by the schematic mode.

It was perhaps fortunate that I chanced to see Rebecca in her so-different modes—so damaged and incorrigible in the one, so full of promise and potential in the other—and that she was one of the first patients I saw in our clinic. For what I saw in her, what she showed me, I now saw in them all.

As I continued to see her, she seemed to deepen. Or perhaps she revealed, or I came to respect, her depths more and more. They were not wholly happy depths—no depths ever are—but they were predominantly happy for the greater part of the year.

Then, in November, her grandmother died, and the light, the joy, she had expressed in April now turned into the deepest grief and darkness. She was devastated, but conducted herself with great dignity. Dignity, ethical depth, was added at this time, to form a grave and lasting counterpoint to the light, lyrical self I had especially seen before.

I called on her as soon as I heard the news, and she received me, with great dignity, but frozen with grief, in her small room in the now empty house. Her speech was again ejaculated, ‘Jacksonian’, in brief utterances of grief and lamentation. ‘Why did she have to go?’ she cried; and added, ‘I’m crying for me, not for her.’ Then, after an interval, ‘Grannie’s all right. She’s gone to her Long Home.’ Long Home! Was this her own symbol, or an unconscious memory of, or allusion to, Ecclesiastes? ‘I’m so cold,’ she cried, huddling into herself. ‘It’s not outside, it’s winter inside. Cold as death,’ she added. ‘She was
a part of me. Part of me died with her.’

She was complete in her mourning—tragic and complete—there was absolutely no sense of her being then a ‘mental defective’. After half an hour, she unfroze, regained some of her warmth and animation, said: ‘It is winter. I feel dead. But I know the spring will come again.’

The work of grief was slow, but successful, as Rebecca, even when most stricken, anticipated. It was greatly helped by a sympathetic and supportive great aunt, a sister of her Grannie, who now moved into the house. It was greatly helped by the synagogue, and the religious community, above all by the rites of ‘sitting shiva’, and the special status accorded her as the bereaved one, the chief mourner. It was helped too perhaps by her speaking freely to me. And it was helped also, interestingly, by dreams, which she related with animation, and which clearly marked stages in the grief-work (see Peters, 1983).

As I remember her, like Nina, in the April sun, so I remember her, etched with tragic clearness, in the dark November of that year, standing in a bleak cemetery in Queens, saying the Kaddish over her grandmother’s grave. Prayers and Bible stories had always appealed to her, going with the happy, the lyrical, the ‘blessing’ side of her life. Now, in the funeral prayers, in the 103rd Psalm, and above all in the Kaddish, she found the right and only words for her comfort and lamentation.

During the intervening months (between my first seeing her, in April, and her grandmother’s death that November) Rebecca—like all our ‘clients’ (an odious word then becoming fashionable, supposedly less degrading than ‘patients’), was pressed into a variety of workshops and classes, as part of our Developmental and Cognitive Drive (these too were ‘in’ terms at the time).

It didn’t work with Rebecca, it didn’t work with most of them. It was not, I came to think, the right thing to do, because what we did was to drive them full-tilt upon their limitations, as had already been done, futilely, and often to the point of cruelty, throughout their lives.

We paid far too much attention to the defects of our patients, as Rebecca was the first to tell me, and far too little to what was intact or preserved. To use another piece of jargon, we were far too concerned with ‘defectology’, and far too little with ‘narratology’, the neglected and needed science of the concrete.

Rebecca made clear, by concrete illustrations, by her own self, the two wholly different, wholly separate, forms of thought and mind, ‘paradigmatic’ and ‘narrative’ (in Bruner’s terminology). And though
equally natural and native to the expanding human mind, the narrative comes first, has spiritual priority. Very young children love and demand stories, and can understand complex matters presented as stories, when their powers of comprehending general concepts, paradigms, are almost non-existent. It is this narrative or symbolic power which gives a sense of the world—a concrete reality in the imaginative form of symbol and story—when abstract thought can provide nothing at all. A child follows the Bible before he follows Euclid. Not because the Bible is simpler (the reverse might be said), but because it is cast in a symbolic and narrative mode.

And in this way Rebecca, at nineteen, was still, as her grandmother said, ‘just like a child’. Like a child, but not a child, because she was adult. (The term ‘retarded’ suggests a persisting child, the term ‘mentally defective’ a defective adult; both terms, both concepts, combine deep truth and falsity.)

With Rebecca—and with other defectives allowed, or encouraged in, a personal development—the emotional and narrative and symbolic powers can develop strongly and exuberantly, and may produce (as in Rebecca) a sort of natural poet—or (as in Jose) a sort of natural artist—while the paradigmatic or conceptual powers, manifestly feeble from the start, grind very slowly and painfully along, and are only capable of a very limited and stunted development.

Rebecca realized this fully—as she had shown it to me so clearly, right from the very first day I saw her, when she spoke of her clumsiness, and of how her ill-composed and ill-organized movements became well-organized, composed and fluent, with music; and when she showed me how she herself was composed by a natural scene, a scene with an organic, aesthetic and dramatic unity and sense.

Rather suddenly, after her grandmother’s death, she became clear and decisive. ‘I want no more classes, no more workshops,’ she said. ‘They do nothing for me. They do nothing to bring me together.’ And then, with that power for the apt model or metaphor I so admired, and which was so well developed in her despite her low IQ, she looked down at the office carpet and said:

‘I’m like a sort of living carpet. I need a pattern, a design, like you have on that carpet. I come apart, I unravel, unless there’s a design.’ I looked down at the carpet, as Rebecca said this, and found myself thinking of Sherrington’s famous image, comparing the brain/mind to an ‘enchanted loom’, weaving patterns ever-dissolving, but always with meaning. I thought: can one have a raw carpet without a design? Could
one have the design without the carpet (but this seemed like the smile without the Cheshire cat)? A ‘living’ carpet, as Rebecca was, had to have both—and she especially, with her lack of schematic structure (the warp and woof, the knit, of the carpet, so to speak), might indeed unravel without a design (the scenic or narrative structure of the carpet).

‘I must have meaning,’ she went on. ‘The classes, the odd jobs have no meaning ... What I really love,’ she added wistfully, ‘is the theatre.’

We removed Rebecca from the workshop she hated, and managed to enroll her in a special theatre group. She loved this—it composed her; she did amazingly well: she became a complete person, poised, fluent, with style, in each role. And now if one sees Rebecca on stage, for theatre and the theatre group soon became her life, one would never even guess that she was mentally defective.

Postscript

The power of music, narrative and drama is of the greatest practical and theoretical importance. One may see this even in the case of idiots, with IQs below 20 and the extremest motor incompetence and bewilderment. Their uncouth movements may disappear in a moment with music and dancing—suddenly, with music, they know how to move. We see how the retarded, unable to perform fairly simple tasks involving perhaps four or five movements or procedures in sequence, can do these perfectly if they work to music—the sequence of movements they cannot hold as schemes being perfectly holdable as music, i.e. embedded in music. The same may be seen, very dramatically, in patients with severe frontal lobe damage and apraxia—an inability to do things, to retain the simplest motor sequences and programmes, even to walk, despite perfectly preserved intelligence in all other ways. This procedural defect, or motor idiocy, as one might call it, which completely defeats any ordinary system of rehabilitative instruction, vanishes at once if music is the instructor. All this, no doubt, is the rationale, or one of the rationales, of work songs.

What we see, fundamentally, is the power of music to organize—and to do this efficaciously (as well as joyfully!), when abstract or schematic forms of organization fail. Indeed, it is especially dramatic, as one would expect, precisely when no other form of organization will work. Thus music, or any other form of narrative, is essential when working with the retarded or apraxic—schooling or therapy for them.
must be centered on music or something equivalent. And in drama there is still more—there is the power of role to give organization, to confer, while it lasts, an entire personality. The capacity to perform, to play, to be, seems to be a ‘given’ in human life, in a way which has nothing to do with intellectual differences. One sees this with infants, one sees it with the senile, and one sees it, most poignantly, with the Rebeccas of this world.
22  A Walking Grove

Martin A., aged 61, was admitted to our Home towards the end of 1983, having become Parkinsonian and unable to look after himself any longer. He had had a nearly fatal meningitis in infancy, which caused retardation, impulsiveness, seizures, and some spasticity on one side. He had very limited schooling, but a remarkable musical education—his father was a famous singer at the Met.

He lived with his parents until their death, and thereafter eked out a marginal living as a messenger, a porter, and a short-order cook—whatever he could do before he was fired, as he invariably was, because of his slowness, dreaminess or incompetence. It would have been a dull and disheartening life, had it not been for his remarkable musical gifts and sensibilities, and the joy this brought him—and others.

He had an amazing musical memory—‘I know more than 2,000 operas,’ he told me on one occasion—although he had never learned or been able to read music. Whether this would have been possible or not was not clear—he had always depended on his extraordinary ear, his power to retain an opera or an oratorio after a single hearing. Unfortunately his voice was not up to his ear—being tuneful, but gruff, with some spastic dysphonia. His innate, hereditary musical gift had clearly survived the ravages of meningitis and brain-damage—or had it? Would he have been a Caruso if undamaged? Or was his musical development, to some extent, a ‘compensation’ for brain-damage and intellectual limitations? We shall never know. What is certain is that his father transmitted not only his musical genes, but his own great love for music, in the intimacy of a father-son relationship, and perhaps the specially tender relation of a parent to a retarded child. Martin—slow, clumsy—was loved by his father, and passionately loved him in return; and their love was cemented by their shared love for music.

The great sorrow of Martin’s life was that he could not follow his father, and be a famous opera and oratorio singer like him—but this was not an obsession, and he found, and gave, much pleasure with what he could do. He was consulted, even by the famous, for his remarkable memory, which extended beyond the music itself to all the details of performance. He enjoyed a modest fame as a ‘walking encyclopedia’, who knew not only the music of two thousand operas, but all the singers who had taken the roles in countless performances, and all the details of scenery, staging, dress and decor. (He also prided himself on a street-by-street, house-by-house, knowledge of New
York—and knowing the routes of all its buses and trains.) Thus, he was an opera-buff, and something of an ‘idiot savant’ too. He took a certain child-like pleasure in all this—the pleasure of such eidetics and freaks. But the real joy—and the only thing that made life supportable—was actual participation in musical events, singing in the choirs at local churches (he could not sing solo, to his grief, because of his dysphonia), especially in the grand events at Easter and Christmas, the John and Matthew Passions, the Christmas Oratorio, the Messiah, which he had done for fifty years, boy and man, in the great churches and cathedrals of the city. He had also sung at the Met, and, when it was pulled down, at Lincoln Center, discreetly concealed amid the vast choruses of Wagner and Verdi.

At such times—in the oratorios and passions most of all, but also in the humbler church choirs and chorales—as he soared up into the music Martin forgot that he was ‘retarded’, forgot all the sadness and badness of his life, sensed a great spaciousness enfold him, felt himself both a true man and a true child of God.

Martin’s world—his inner world—what sort of a world did he have? He had very little knowledge of the world at large, at least very little living knowledge, and no interest at all. If a page of an encyclopedia or newspaper was read to him, or a map of Asia’s rivers or New York’s subways shown to him, it was recorded, instantly, in his eidetic memory. But he had no relation to these eidetic recordings—they were ‘a-centric’, to use Richard Wollheim’s term, without him, without anyone, or anything, as a living centre. There seemed little or no emotion in such memories—no more emotion than there is in a street-map of New York—nor did they connect, or ramify, or get generalized, in any way. Thus his eidetic memory—the freak part of him—did not in itself form, or convey any sense of, a ‘world’. It was without unity, without feeling, without relation to himself. It was physiological, one felt, like a memory-core or memory-bank, but not part of a real and personal living self.

And yet, even here, there was a single and striking exception, at once his most prodigious, most personal, and most pious deed of memory. He knew by heart Grove’s Dictionary of Music and Musicians, the immense nine-volume edition published in 1954— indeed he was a ‘walking Grove’. His father was ageing and somewhat ailing by then, could no longer sing actively, but spent most of his time at home, playing his great collection of vocal records on the phonograph, going through and singing all his scores— which he did with his now thirty-
year-old son (in the closest and most affectionate communion of their lives), and reading aloud Grove’s dictionary—all six thousand pages of it—which, as he read, was indelibly printed upon his son’s limitlessly retentive, if illiterate, cortex. Grove, thereafter, was ‘heard’ in his father’s voice—and could never be recollected by him without emotion.

Such prodigious hypertrophies of eidetic memory, especially if employed or exploited ‘professionally’, sometimes seem to oust the real self, or to compete with it, and impede its development. And if there is no depth, no feeling, there is also no pain in such memories—and so they can serve as an ‘escape’ from reality. This clearly occurred, to a great extent, in Luria’s Mnemonist, and is poignantly described in the last chapter of his book. It obviously occurred, to some extent, in Martin A., Jose, and the Twins but was also, in each case, used for reality, even ‘super-reality’—an exceptional, intense, and mystical sense of the world ...

Eidetics apart, what of his world generally? It was, in many respects, small, petty, nasty, and dark—the world of a retardate who had been teased and left out as a child, and then hired and fired, contemptuously, from menial jobs, as a man: the world of someone who had rarely felt himself, or felt regarded as, a proper child or man.

He was often childish, sometimes spiteful, and prone to sudden tantrums—and the language he then used was that of a child. ‘I’ll throw a mudpie in your face!’ I once heard him scream, and, occasionally, he spat or struck out. He sniffed, he was dirty, he blew snot on his sleeve—he had the look (and doubtless the feelings) at such times of a small, snotty child. These childish characteristics, topped off by his irritating, eidetic showing off, endeared him to nobody. He soon became unpopular in the Home, and found himself shunned by many of the residents. A crisis was developing, with Martin regressing weekly and daily, and nobody was quite sure, at first, what to do. It was at first put down to ‘adjustment difficulties’, such as all patients may experience on giving up independent living outside, and coming into a ‘Home’. But Sister felt there was something more specific at work—‘something gnawing him, a sort of hunger, a gnawing hunger we can’t assuage. It’s destroying him,’ she continued. ‘We have to do something.’

So, in January, for the second time, I went to see Martin—and found a very different man: no longer cocky, showing off, as before, but obviously pining, in spiritual and a sort of physical pain.

‘What is it?’ I said. ‘What is the matter?’
‘I’ve got to sing,’ he said hoarsely. ‘I can’t live without it. And it’s not just music—I can’t pray without it.’ And then, suddenly, with a flash of his old memory: ‘“Music, to Bach, was the apparatus of worship”, Grove article on Bach, page 304 ... I’ve never spent a Sunday,’ he continued, more gently, reflectively, ‘without going to church, without singing in the choir. I first went there, with my father, when I was old enough to walk, and I continued going after his death in 1955. I’ve got to go,’ he said fiercely. ‘It’ll kill me if I don’t.’

‘And go you shall,’ I said. ‘We didn’t know what you were missing.’

The church was not far from the Home, and Martin was welcomed back—not only as a faithful member of the congregation and the choir, but as the brains and adviser of the choir that his father had been before him.

With this, life suddenly and dramatically changed. Martin had resumed his proper place, as he felt it. He could sing, he could worship, in Bach’s music, every Sunday, and also enjoy the quiet authority that was accorded him.

‘You see,’ he told me, on my next visit, without cockiness, but as a simple matter of fact, ‘they know I know all Bach’s liturgical and choral music. I know all the church cantatas—all 202 that Grove lists—and which Sundays and Holy Days they should be sung on. We are the only church in the diocese with a real orchestra and choir, the only one where all of Bach’s vocal works are regularly sung. We do a cantata every Sunday—and we are going to do the Matthew Passion this Easter!’

I thought it curious and moving that Martin, a retardate, should have this great passion for Bach. Bach seemed so intellectual—and Martin was a simpleton. What I did not realize, until I started bringing in cassettes of the cantatas, and once of the Magnificat, when I visited, was that for all his intellectual limitations Martin’s musical intelligence was fully up to appreciating much of the technical complexity of Bach; but, more than this—that it wasn’t a question of intelligence at all. Bach lived for him, and he lived in Bach.

Martin did, indeed, have ‘freak’ musical abilities—but they were only freak-like if removed from their right and natural context.

What was central to Martin, as it had been central for his father, and what had been intimately shared between them, was always the spirit of music, especially religious music, and of the voice as the divine instrument made and ordained to sing, to raise itself in jubilation and praise.
Martin became a different man, then, when he returned to song and church—recovered himself, recollected himself, became real again. The pseudo-persons—the stigmatized retardate, the snotty, spitting boy—disappeared; as did the irritating, emotionless, impersonal eidetic. The real person reappeared, a dignified, decent man, respected and valued now by the other residents.

But the marvel, the real marvel, was to see Martin when he was actually singing, or in communion with music—listening with an intentness which verged on rapture—‘a man in his wholeness wholly attending’. At such times—it was the same with Rebecca when she acted, or Jose when he drew, or the Twins in their strange numerical communion—Martin was, in a word, transformed. All that was defective or pathological fell away, and one saw only absorption and animation, wholeness and health.

Postscript

When I wrote this piece, and the two succeeding ones, I wrote solely out of my own experience, with almost no knowledge of the literature on the subject, indeed with no knowledge that there was a large literature (see, for example, the fifty-two references in Lewis Hill, 1974). I only got an inkling of it, often baffling and intriguing, after ‘The Twins’ was first published, when I found myself inundated with letters and offprints.

In particular, my attention was drawn to a beautiful and detailed case-study by David Viscott (1970). There are many similarities between Martin and his patient Harriet G. In both cases there were extraordinary powers—which were sometimes used in an ‘a-centric’ or life-denying way, sometimes in a life-affirming and creative way: thus, after her father had read it to her, Harriet retained the first three pages of the Boston Telephone Directory (‘and for several years could give any number on these pages on request’); but, in a wholly different, and strikingly creative, mode she could compose, and improvise, in the style of any composer.

It is clear that both—like the Twins (see the next chapter)—could be pushed, or drawn, into the sort of mechanical feats considered typical of ‘idiot savants’—feats at once prodigious and meaningless; but that both also (like the Twins), when not pushed or drawn in this fashion, showed a consistent seeking after beauty and order. Though Martin has an amazing memory for random, meaningless facts, his real pleasure comes from order and coherence, whether it be the musical
and spiritual order of a cantata, or the encyclopedic order of Grove. Both Bach and Grove communicate a *world*. Martin, indeed, has no world *but* music—as is the case with Viscott’s patient—but this world is a real world), makes him real, can transform him. This is marvelous to see with Martin—and it was evidently no less so with Harriet G:

This ungainly, awkward, inelegant lady, this overgrown five-year-old, became absolutely transformed when I asked her to perform for a seminar at Boston State Hospital. She sat down demurely, stared quietly at the keyboard until we all grew silent, and brought her hands slowly to the keyboard and let them rest a moment. Then she nodded her head and began to play with all the feeling and movement of a concert performer. From that moment she was another person.

One speaks of ‘idiot savants’ as if they had an odd ‘knack’ or talent of a mechanical sort, with no real intelligence or understanding. This, indeed, was what I first thought with Martin—and continued to think until I brought in the *Magnificat*. Only then did it finally become clear to me that Martin could grasp the full complexity of such a work, and that it was not just a knack, or a remarkable rote memory at work, but a genuine and powerful musical intelligence. I was particularly interested, therefore, after this book was first published, to receive a fascinating article by L. K. Miller of Chicago entitled “Sensitivity to Tonal Structure in a Developmentally Disabled Musical Savant” (presented at the Psychonomics Society, Boston, November 1985; currently in press). Meticulous study of this five-year-old prodigy, with severe mental and other handicaps due to maternal rubella, showed not rote memory of a mechanical sort, but ‘... impressive sensitivity to the rules governing composition, particularly the role of different notes in determining (diatonic) key-structure ... (implying) implicit knowledge of structural rules in a generative sense: that is, rules not limited to the specific examples provided by one’s experience.’ This, I am convinced, is the case with Martin, too— and one must wonder whether it may not be true of all ‘idiot savants’: that they may be truly and creatively intelligent, and not just have a mechanical ‘knack’, in the specific realms—musical, numerical, visual, whatever—in which they excel. It is the *intelligence* of a Martin, a Jose, the Twins, albeit in a special and narrow area, that finally forces itself on one; and it is this *intelligence* that must be recognized and nurtured.
The Twins

When I first met the twins, John and Michael, in 1966 in a state hospital, they were already well known. They had been on radio and television, and made the subject of detailed scientific and popular reports. They had even, I suspected, found their way into science fiction, a little ‘fictionalized’, but essentially as portrayed in the accounts that had been published.

The twins, who were then twenty-six years old, had been in institutions since the age of seven, variously diagnosed as autistic, psychotic or severely retarded. Most of the accounts concluded that, as idiots savants go, there was ‘nothing much to them’—except for their remarkable ‘documentary’ memories of the tiniest visual details of their own experience, and their use of an unconscious, calendrical algorithm that enabled them to say at once on what day of the week a date far in the past or future would fall. This is the view taken by Steven Smith, in his comprehensive and imaginative book, The Great Mental Calculators (1983). There have been, to my knowledge, no further studies of the twins since the mid-Sixties, the brief interest they aroused being quenched by the apparent ‘solution’ of the problems they presented.

But this, I believe, is a misapprehension, perhaps a natural enough one in view of the stereotyped approach, the fixed format of questions, the concentration on one ‘task’ or another, with which the original investigators approached the twins, and by which they reduced them—their psychology, their methods, their lives—almost to nothing. The reality is far stranger, far more complex, far less explicable, than any of these studies suggest, but it is not even to be glimpsed by aggressive formal ‘testing’, or the usual 60 Minutes-like interviewing of the twins.

Not that any of these studies, or TV performances, is ‘wrong’. They are quite reasonable, often informative, as far as they go, but they confine themselves to the obvious and testable ‘surface,’ and do not go to the depths—do not even hint, or perhaps guess, that there are depths below.

One indeed gets no hint of any depths unless one ceases to test the twins, to regard them as ‘subjects’. One must lay aside the urge to limit and test, and get to know the twins—observe them, openly, quietly, without presuppositions, but with a full and sympathetic phenomenological openness, as they live and think and interact quietly, pursuing their own lives, spontaneously, in their singular way. Then one finds there is something exceedingly mysterious at work, powers
and depths of a perhaps fundamental sort, which I have not been able to ‘solve’ in the eighteen years that I have known them.

They are, indeed, unprepossessing at first encounter—a sort of grotesque Tweedledum and Tweedledee, indistinguishable, mirror images, identical in face, in body movements, in personality, in mind, identical too in their stigmata of brain and tissue damage. They are undersized, with disturbing disproportions in head and hands, high-arched palates, high-arched feet, monotonous squeaky voices, a variety of peculiar tics and mannerisms, and a very high, degenerative myopia, requiring glasses so thick that their eyes seem distorted, giving them the appearance of absurd little professors, peering and pointing, with a misplaced, obsessed, and absurd concentration. And this impression is fortified as soon as one quizzes them—or allows them, as they are apt to do, like pantomime puppets, to start spontaneously on one of their ‘routines’.

This is the picture that has been presented in published articles, and on stage—they tend to be ‘featured’ in the annual show in the hospital I work in—and in their not infrequent, and rather embarrassing, appearances on TV.

The ‘facts’, under these circumstances, are established to monotony. The twins say, ‘Give us a date—any time in the last or next forty thousand years.’ You give them a date, and, almost instantly, they tell you what day of the week it would be. ‘Another date!’ they cry, and the performance is repeated. They will also tell you the date of Easter during the same period of 80,000 years. One may observe, though this is not usually mentioned in the reports, that their eyes move and fix in a peculiar way as they do this—as if they were unrolling, or scrutinizing, an inner landscape, a mental calendar. They have the look of ‘seeing’, of intense visualization, although it has been concluded that what is involved is pure calculation.

Their memory for digits is remarkable—and possibly unlimited. They will repeat a number of three digits, of thirty digits, of three hundred digits, with equal ease. This too has been attributed to a ‘method’.

But when one comes to test their ability to calculate—the typical forte of arithmetical prodigies and ‘mental calculators’—they do astonishingly badly, as badly as their IQs of sixty might lead one to think. They cannot do simple addition or subtraction with any accuracy, and cannot even comprehend what multiplication or division means. What is this: ‘calculators’ who cannot calculate, and lack even the most rudimentary powers of arithmetic?
And yet they are called ‘calendar calculators’—and it has been inferred and accepted, on next to no grounds, that what is involved is not memory at all, but the use of an unconscious algorithm for calendar calculations. When one recollects how even Carl Friedrich Gauss, at once one of the greatest of mathematicians, and of calculators too, had the utmost difficulty in working out an algorithm for the date of Easter, it is scarcely credible that these twins, incapable of even the simplest arithmetical methods, could have inferred, worked out, and be using such an algorithm. A great many calculators, it is true, do have a larger repertoire of methods and algorithms they have worked out for themselves, and perhaps this predisposed W.A. Horwitz et al. to conclude this was true of the twins too. Steven Smith, taking these early studies at face value, comments:

Something mysterious, though commonplace, is operating here—the mysterious human ability to form unconscious algorithms on the basis of examples.

If this were the beginning and end of it, they might indeed be seen as commonplace, and not mysterious at all—for the computing of algorithms, which can be done well by machine, is essentially mechanical, and comes into the spheres of ‘problems’, but not ‘mysteries’.

And yet, even in some of their performances, their ‘tricks’, there is a quality that takes one aback. They can tell one the weather, and the events, of any day in their lives—any day from about their fourth year on. Their way of talking—well conveyed by Robert Silverberg in his portrayal of the character Melangio—is at once childlike, detailed, without emotion. Give them a date, and their eyes roll for a moment, and then fixate, and in a flat, monotonous voice they tell you of the weather, the bare political events they would have heard of, and the events of their own lives—this last often including the painful or poignant anguish of childhood, the contempt, the jeers, the mortifications they endured, but all delivered in an even and unvarying tone, without the least hint of any personal inflection or emotion. Here, clearly, one is dealing with memories that seem of a ‘documentary’ kind, in which there is no personal reference, no personal relation, no living centre whatever.

It might be said that personal involvement, emotion, has been edited out of these memories, in the sort of defensive way one may observe in obsessive or schizoid types (and the twins must certainly be considered obsessive and schizoid). But it could be said, equally, and
indeed more plausibly, that memories of this kind never had any personal character, for this indeed is a cardinal characteristic of eidetic memory such as this.

But what needs to be stressed—and this is insufficiently remarked on by their studiers, though perfectly obvious to a naive listener prepared to be amazed—is the magnitude of the twins’ memory, its apparently limitless (if childish and commonplace) extent, and with this the way in which memories are retrieved. And if you ask them how they can hold so much in their minds—a three-hundred-figure digit, or the trillion events of four decades—they say, very simply, ‘We see it.’ And ‘seeing’—‘visualizing’—of extraordinary intensity, limitless range, and perfect fidelity, seems to be the key to this. It seems a native physiological capacity of their minds, in a way which has some analogies to that by which A.R. Luria’s famous patient, described in The Mind of a Mnemonist, ‘saw’, though perhaps the twins lack the rich synesthesia and conscious organization of the Mnemonist’s memories. But there is no doubt, in my mind at least, that there is available to the twins a prodigious panorama, a sort of landscape or physiognomy, of all they have ever heard, or seen, or thought, or done, and that in the blink of an eye, externally obvious as a brief rolling and fixation of the eyes, they are able (with the ‘mind’s eye’) to retrieve and ‘see’ nearly anything that lies in this vast landscape.

Such powers of memory are most uncommon, but they are hardly unique. We know little or nothing about why the twins or anyone else have them. Is there then anything in the twins that is of deeper interest, as I have been hinting? I believe there is.

It is recorded of Sir Herbert Oakley, the nineteenth-century Edinburgh professor of music, that once, taken to a farm, he heard a pig squeak and instantly cried ‘G sharp!’ Someone ran to the piano, and G sharp it was. My own first sight of the ‘natural’ powers, and ‘natural’ mode, of the twins came in a similar, spontaneous, and (I could not help feeling) rather comic, manner.

A box of matches on their table fell, and discharged its contents on the floor: ‘111,’ they both cried simultaneously; and then, in a murmur, John said ‘37’. Michael repeated this, John said it a third time and stopped. I counted the matches—it took me some time—and there were 111.

‘How could you count the matches so quickly?’ I asked. ‘We didn’t count,’ they said. ‘We saw the 111.’

Similar tales are told of Zacharias Dase, the number prodigy, who
would instantly call out ‘183’ or ‘79’ if a pile of peas was poured out, and indicate as best he could—he was also a dullard—that he did not count the peas, but just ‘saw’ their number, as a whole, in a flash.

‘And why did you murmur “37,” and repeat it three times?’ I asked the twins. They said in unison, ‘37, 37, 37, 111.’

And this, if possible, I found even more puzzling. That they should see 111—‘111-ness’—in a flash was extraordinary, but perhaps no more extraordinary than Oakley’s ‘G sharp’—a sort of ‘absolute pitch’, so to speak, for numbers. But they had then gone on to ‘factor’ the number 111—without having any method, without even ‘knowing’ (in the ordinary way) what factors meant. Had I not already observed that they were incapable of the simplest calculations, and didn’t ‘understand’ (or seem to understand) what multiplication or division was? Yet now, spontaneously, they had divided a compound number into three equal parts.

‘How did you work that out?’ I said, rather hotly. They indicated, as best they could, in poor, insufficient terms—but perhaps there are no words to correspond to such things—that they did not ‘work it out’, but just ‘saw’ it, in a flash. John made a gesture with two outstretched fingers and his thumb, which seemed to suggest that they had spontaneously trisected the number, or that it ‘came apart’ of its own accord, into these three equal parts, by a sort of spontaneous, numerical ‘fission’. They seemed surprised at my surprise—as if/ were somehow blind; and John’s gesture conveyed an extraordinary sense of immediate, felt reality. Is it possible, I said to myself, that they can somehow ‘see’ the properties, not in a conceptual, abstract way, but as qualities, felt, sensuous, in some immediate, concrete way? And not simply isolated qualities—like ‘111-ness’—but qualities of relationship? Perhaps in somewhat the same way as Sir Herbert Oakley might have said ‘a third,’ or ‘a fifth’.

I had already come to feel, through their ‘seeing’ events and dates, that they could hold in their minds, did hold, an immense mnemonic tapestry, a vast (or possibly infinite) landscape in which everything could be seen, either isolated or in relation. It was isolation, rather than a sense of relation, that was chiefly exhibited when they unfurled their implacable, haphazard ‘documentary’.

But might not such prodigious powers of visualization—powers essentially concrete, and quite distinct from conceptualization—might not such powers give them the potential of seeing relations, formal relations, relations of form, arbitrary or significant? If they could see
‘111-ness’ at a glance (if they could see an entire ‘constellation’ of numbers), might they not also ‘see’, at a glance—see, recognize, relate and compare, in an entirely sensual and non-intellectual way—enormously complex formations and constellations of numbers? A ridiculous, even disabling power. I thought of Borges’s ‘Funes’:

We, at one glance, can perceive three glasses on a table; Funes, all the leaves and tendrils and fruit that make up a grape vine ... A circle drawn on a blackboard, a right angle, a lozenge— all these are forms we can fully and intuitively grasp; Ireneo could do the same with the stormy mane of a pony, with a herd of cattle on a hill ... I don’t know how many stars he could see in the sky.

Could the twins, who seemed to have a peculiar passion and grasp of numbers—could these twins, who had seen ‘111-ness’ at a glance, perhaps see in their minds a numerical ‘vine’, with all the number-leaves, number-tendrils, number-fruit, that made it up? A strange, perhaps absurd, almost impossible thought—but what they had already shown me was so strange as to be almost beyond comprehension. And it was, for all I knew, the merest hint of what they might do.

I thought about the matter, but it hardly bore thinking about. And then I forgot it. Forgot it until a second, spontaneous scene, a magical scene, which I blundered into, completely by chance.

This second time they were seated in a corner together, with a mysterious, secret smile on their faces, a smile I had never seen before, enjoying the strange pleasure and peace they now seemed to have. I crept up quietly, so as not to disturb them. They seemed to be locked in a singular, purely numerical, converse. John would say a number—a six-figure number. Michael would catch the number, nod, smile and seem to savor it. Then he, in turn, would say another six-figure number, and now it was John who received, and appreciated it richly. They looked, at first, like two connoisseurs wine-tasting, sharing rare tastes, rare appreciations. I sat still, unseen by them, mesmerized, bewildered.

What were they doing? What on earth was going on? I could make nothing of it. It was perhaps a sort of game, but it had a gravity and an intensity, a sort of serene and meditative and almost holy intensity, which I had never seen in any ordinary game before, and which I certainly had never seen before in the usually agitated and distracted twins. I contented myself with noting down the numbers they uttered—the numbers that manifestly gave them such delight, and which they ‘contemplated’, savored, shared, in communion.
Had the numbers any meaning, I wondered on the way home, had they any ‘real’ or universal sense, or (if any at all) a merely whimsical or private sense, like the secret and silly ‘languages’ brothers and sisters sometimes work out for themselves? And, as I drove home, I thought of Luria’s twins—Liosha and Yura—braindamaged, speech-damaged identical twins, and how they would play and prattle with each other, in a primitive, babble-like language of their own (Luria and Yudovich, 1959). John and Michael were not even using words or half-words—simply throwing numbers at each other. Were these ‘Borgesian’ or ‘Funesian’ numbers, mere numeric vines, or pony manes, or constellations, private number-forms—a sort of number argot—known to the twins alone?

As soon as I got home I pulled out tables of powers, factors, logarithms and primes—mementos and relics of an odd, isolated period in my own childhood, when I too was something of a number brooder, a number ‘see-er’, and had a peculiar passion for numbers. I already had a hunch—and now I confirmed it. All the numbers, the six-figure numbers, which the twins had exchanged were primes—i.e., numbers that could be evenly divided by no other whole number than itself or one. Had they somehow seen or possessed such a book as mine—or were they, in some unimaginable way, themselves ‘seeing’ primes, in somewhat the same way as they had ‘seen’ 111-ness, or triple 37-ness? Certainly they could not be calculating them—they could calculate nothing.

I returned to the ward the next day, carrying the precious book of primes with me. I again found them closeted in their numerical communion, but this time, without saying anything, I quietly joined them. They were taken aback at first, but when I made no interruption, they resumed their ‘game’ of six-figure primes. After a few minutes I decided to join in, and ventured a number, an eight-figure prime. They both turned towards me, then suddenly became still, with a look of intense concentration and perhaps wonder on their faces. There was a long pause—the longest I had ever known them to make, it must have lasted a half-minute or more—and then suddenly, simultaneously, they both broke into smiles.

They had, after some unimaginable internal process of testing, suddenly seen my own eight-digit number as a prime—and this was manifestly a great joy, a double joy, to them; first because I had introduced a delightful new plaything, a prime of an order they had never previously encountered; and, secondly, because it was evident
that I had seen what they were doing, that I liked it, that I admired it, and that I could join in myself.

They drew apart slightly, making room for me, a new number playmate, a third in their world. Then John, who always took the lead, thought for a very long time—it must have been at least five minutes, though I dared not move, and scarcely breathed—and brought out a nine-figure number; and after a similar time his twin, Michael, responded with a similar one. And then I, in my turn, after a surreptitious look in my book, added my own rather dishonest contribution, a ten-figure prime I found in my book.

There was again, and for even longer, a wondering, still silence; and then John, after a prodigious internal contemplation, brought out a twelve-figure number. I had no way of checking this, and could not respond, because my own book—which, as far as I knew, was unique of its kind—did not go beyond ten-figure primes. But Michael was up to it, though it took him five minutes—and an hour later the twins were swapping twenty-figure primes, at least I assume this was so, for I had no way of checking it. Nor was there any easy way, in 1966, unless one had the use of a sophisticated computer. And even then, it would have been difficult, for whether one uses Eratosthenes’ sieve, or any other algorithm, there is no simple method of calculating primes. There is no simple method, for primes of this order—and yet the twins were doing it. (But see the Postscript.)

Again I thought of Dase, whom I had read of years before, in F.W.H. Myers’s enchanting book *Human Personality* (1903).

We know that Dase (perhaps the most successful of such prodigies) was singularly devoid of mathematical grasp ... Yet he in twelve years made tables of factors and prime numbers for the seventh and nearly the whole of the eighth million—a task which few men could have accomplished, without mechanical aid, in an ordinary lifetime.

He may thus be ranked, Myers concludes, as the only man who has ever done valuable service to Mathematics without being able to cross the Ass’s Bridge.

What is not made clear, by Myers, and perhaps was not clear, is whether Dase had any method for the tables he made up, or whether, as hinted in his simple ‘number-seeing’ experiments, he somehow ‘saw’ these great primes, as apparently the twins did.

As I observed them, quietly—this was easy to do, because I had an office on the ward where the twins were housed—I observed them in countless other sorts of number games or number communion, the
nature of which I could not ascertain or even guess at.

But it seems likely, or certain, that they are dealing with ‘real’ properties or qualities—for the arbitrary, such as random numbers, gives them no pleasure, or scarcely any, at all. It is clear that they must have ‘sense’ in their numbers—in the same way, perhaps, as a musician must have harmony. Indeed I find myself comparing them to musicians—or to Martin (Chapter Twenty-two), also retarded, who found in the serene and magnificent architectonics of Bach a sensible manifestation of the ultimate harmony and order of the world, wholly inaccessible to him conceptually because of his intellectual limitations.

‘Whoever is harmonically composed,’ writes Sir Thomas Browne, ‘delights in harmony ... and a profound contemplation of the First Composer. There is something in it of Divinity more than the ear discovers; it is an Hieroglyphical and shadowed Lesson of the whole World ... a sensible fit of that harmony which intellectually sounds in the ears of God ... The soul ... is harmonical, and hath its nearest sympathy unto Musick.’

Richard Wollheim in *The Thread of Life* (1984) makes an absolute distinction between calculations and what he calls ‘iconic’ mental states, and he anticipates a possible objection to this distinction.

Someone might dispute the fact that all calculations are non-iconic on the grounds that, when he calculates, sometimes, he does so by visualizing the calculation on a page. But this is not a counter-example. For what is represented in such cases is not the calculation itself, but a representation of it; it is *numbers* that are calculated, but what is visualized are *numerals*, which represent numbers.

Leibniz, on the other hand, makes a tantalizing analogy between numbers and music: ‘The pleasure we obtain from music comes from counting, but counting unconsciously. Music is nothing but unconscious arithmetic’

What, so far as we can ascertain, is the situation with the twins, and perhaps others? Ernst Toch, the composer—his grandson Lawrence Weschler tells me—could readily hold in his mind after a single hearing a very long string of numbers; but he did this by ‘converting’ the string of numbers to a tune (a melody he himself shaped ‘corresponding’ to the numbers). Jedediah Buxton, one of the most ponderous but tenacious calculators of all time, and a man who had a veritable, even pathological, passion for calculation and counting (he would become, in his own words, ‘drunk with reckoning’), would ‘convert’ music and drama to numbers. ‘During the dance,’ a contemporary account of him
recorded in 1754, ‘he fixed his attention upon the number of steps; he declared after a fine piece of musick, that the innumerable sounds produced by the music had perplexed him beyond measure, and he attended even to Mr Garrick only to count the words that he uttered, in which he said he perfectly succeeded.’

Here is a pretty, if extreme, pair of examples—the musician who turns numbers into music, and the counter who turns music into numbers. One could scarcely have, one feels, more opposite sorts of mind, or, at least, more opposite modes of mind. (Something comparable to Buxton’s mode, which perhaps appears the more ‘unnatural’ of the two, was shown by my patient Miriam H. in Awakenings when she had ‘arithmomanic’ attacks.)

I believe the twins, who have an extraordinary ‘feeling’ for numbers, without being able to calculate at all, are allied not to Buxton but to Toch in this matter. Except—and this we ordinary people find so difficult to imagine—except that they do not ‘convert’ numbers into music, but actually feel them, in themselves, as ‘forms’, as ‘tones’, like the multitudinous forms that compose nature itself. They are not calculators, and their numeracy is ‘iconic’. They summon up, they dwell among, strange scenes of numbers; they wander freely in great landscapes of numbers; they create, dramaturgically, a whole world made of numbers. They have, I believe, a most singular imagination—and not the least of its singularities is that it can imagine only numbers. They do not seem to ‘operate’ with numbers, non-iconically, like a calculator; they ‘see’ them, directly, as a vast natural scene.

And if one asks, are there analogies, at least, to such an ‘icon-icity’, one would find this, I think, in certain scientific minds. Dmitri Mendeleev, for example, carried around with him, written on cards, the numerical properties of elements, until they became utterly ‘familiar’ to him—so familiar that he no longer thought of them as aggregates of properties, but (so he tells us) ‘as familiar faces’. He now saw the elements, iconically, physiognomically, as ‘faces’—faces that related, like members of a family, and that made up, in toto, periodically arranged, the whole formal face of the universe. Such a scientific mind is essentially ‘iconic’, and ‘sees’ all nature as faces and scenes, perhaps as music as well. This ‘vision’, this inner vision, suffused with the phenomenal, none the less has an integral relation with the physical, and returning it, from the psychical to the physical, constitutes the secondary, or external, work of such science. (The philosopher seeks to hear within himself the echoes of the world symphony,’ writes
Nietzsche, ‘and to re-project them in the form of concepts.’) The twins, though morons, hear the world symphony, I conjecture, but hear it entirely in the form of numbers.

The soul is ‘harmonical’ whatever one’s IQ and for some, like physical scientists and mathematicians, the sense of harmony, perhaps, is chiefly intellectual. And yet I cannot think of anything intellectual that is not, in some way, also sensible—indeed the very word ‘sense’ always has this double connotation. Sensible, and in some sense ‘personal’ as well, for one cannot feel anything, find anything ‘sensible’, unless it is, in some way, related or relatable to oneself. Thus the mighty architectonics of Bach provide, as they did for Martin A., ‘an Hieroglyphical and shadowed Lesson of the whole World’, but they are also, recognizably, uniquely, dearly, Bach; and this too was felt, poignantly, by Martin A., and related by him to the love he bore his father.

The twins, I believe, have not just a strange ‘faculty’—but a sensibility, a harmonic sensibility, perhaps allied to that of music. One might speak of it, very naturally, as a ‘Pythagorean’ sensibility—and what is odd is not its existence, but that it is apparently so rare. One’s soul is ‘harmonical’ whatever one’s IQ, and perhaps the need to find or feel some ultimate harmony or order is a universal of the mind, whatever its powers, and whatever form it takes. Mathematics has always been called the ‘queen of sciences’, and mathematicians have always felt number as the great mystery, and the world as organized, mysteriously, by the power of number. This is beautifully expressed in the prologue to Bertrand Russell’s *Autobiography*:

> With equal passion I have sought knowledge. I have wished to understand the hearts of men. I have wished to know why the stars shine. And I have tried to apprehend the Pythagorean power by which number holds sway above the flux.

It is strange to compare these moron twins to an intellect, a spirit, like that of Bertrand Russell. And yet it is not, I think, so far-fetched. The twins live exclusively in a thought-world of numbers. They have no interest in the stars shining, or the hearts of men. And yet numbers for them, I believe, are not ‘just’ numbers, but significances, signifiers whose ‘significand’ is the world.

They do not approach numbers lightly, as most calculators do. They are not interested in, have no capacity for, cannot comprehend, calculations. They are, rather, serene contemplators of number—and approach numbers with a sense of reverence and awe. Numbers for
them are holy, fraught with significance. This is their way—as music is Martin’s way—of apprehending the First Composer.

But numbers are not just awesome for them, they are friends too—perhaps the only friends they have known in their isolated, autistic lives. This is a rather common sentiment among people who have a talent for numbers—and Steven Smith, while seeing ‘method’ as all-important, gives many delightful examples of it: George Parker Bidder, who wrote of his early number-childhood, ‘I became perfectly familiar with numbers up to 100; they became as it were my friends, and I knew all their relations and acquaintances’; or the contemporary Shyam Marathe, from India—‘When I say that numbers are my friends, I mean that I have some time in the past dealt with that particular number in a variety of ways, and on many occasions have found new and fascinating qualities hidden in it ... So, if in a calculation I come across a known number, I immediately look to him as a friend.’

Hermann von Helmholtz, speaking of musical perception, says that though compound tones can be analyzed, and broken down into their components, they are normally heard as qualities, unique qualities of tone, indivisible wholes. He speaks here of a ‘synthetic perception’ which transcends analysis, and is the unanalyzable essence of all musical sense. He compares such tones to faces, and speculates that we may recognize them in somewhat the same, personal way. In brief, he half suggests that musical tones, and certainly tunes, are, in fact, ‘faces’ for the ear, and are recognized, felt, immediately as ‘persons’ (or ‘personities’), a recognition involving warmth, emotion, personal relation.

So it seems to be with those who love numbers. These too become recognizable as such—in a single, intuitive, personal ‘I know you!’ (Particularly fascinating and fundamental problems are raised by the perception and recognition of faces—for there is much evidence that we recognize faces (at least familiar faces) directly—and not by any process of piecemeal analysis or aggregation. This, as we have seen, is most dramatically shown in ‘prosopagnosia’, in which, as a consequence of a lesion in the right occipital cortex, patients become unable to recognize faces as such, and have to employ an elaborate, absurd, and indirect route, involving a bit-by-bit analysis of meaningless and separate features (Chapter One).) The mathematician Wim Klein has put this well:

‘Numbers are friends for me, more or less. It doesn’t mean the same for you, does it—3,844? For you it’s just a three and an eight and
a four and a four. But I say, “Hi! 62 squared.”

I believe the twins, seemingly so isolated, live in a world full of friends, that they have millions, billions, of numbers to which they say ‘Hi!’ and which, I am sure, say ‘Hi!’ back. But none of the numbers is arbitrary—like 62 squared—nor (and this is the mystery) is it arrived at by any of the usual methods, or any method so far as I can make out. The twins seem to employ a direct cognition—like angels. They see, directly, a universe and heaven of numbers. And this, however singular, however bizarre—but what right have we to call it ‘pathological’?—provides a singular self-sufficiency and serenity to their lives, and one which it might be tragic to interfere with, or break.

This serenity was, in fact, interrupted and broken up ten years later, when it was felt that the twins should be separated—‘for their own good’, to prevent their ‘unhealthy communication together’, and in order that they could ‘come out and face the world ... in an appropriate, socially acceptable way’ (as the medical and sociological jargon had it). They were separated, then, in 1977, with results that might be considered as either gratifying or dire. Both have been moved now into ‘halfway houses’, and do menial jobs, for pocket money, under close supervision. They are able to take buses, if carefully directed and given a token, and to keep themselves moderately presentable and clean, though their moronic and psychotic character is still recognizable at a glance.

This is the positive side—but there is a negative side too (not mentioned in their charts, because it was never recognized in the first place). Deprived of their numerical ‘communion’ with each other, and of time and opportunity for any ‘contemplation’ or ‘communion’ at all—they are always being hurried and jostled from one job to another—they seem to have lost their strange numerical power, and with this the chief joy and sense of their lives. But this is considered a small price to pay, no doubt, for their having become quasi-independent and ‘socially acceptable’.

One is reminded somewhat of the treatment meted out to Nadia—an autistic child with a phenomenal gift for drawing (see below, p. 219). Nadia too was subjected to a therapeutic regime ‘to find ways in which her potentialities in other directions could be maximized’. The net effect was that she started talking—and stopped drawing. Nigel Dennis comments: ‘We are left with a genius who has had her genius removed, leaving nothing behind but a general defectiveness. What are we supposed to think about such a curious cure?’
It should be added—this is a point dwelt on by F.W.H. Myers, whose consideration of number prodigies opens his chapter on ‘Genius’—that the faculty is ‘strange’, and may disappear spontaneously, though it is, as often, lifelong. In the case of the twins, of course, it was not just a ‘faculty’, but the personal and emotional centre of their lives. And now they are separated, now it is gone, there is no longer any sense or centre to their lives. (*On the other hand, should this discussion be thought too singular or perverse, it is important to note that in the case of the twins studied by Luria, their separation was essential for their own development, ‘unlocked’ them from a meaningless and sterile babble and bind, and permitted them to develop as healthy and creative people.*)

**Postscript**

When he was shown the manuscript of this paper, Israel Rosenfield pointed out that there are other arithmetics, higher and simpler than the ‘conventional’ arithmetic of operations, and wondered whether the twins’ singular powers (and limitations) might not reflect their use of such a ‘modular’ arithmetic. In a note to me, he has speculated that modular algorithms, of the sort described by Ian Stewart in *Concepts of Modern Mathematics* (1975) may explain the twins’ calendrical abilities:

Their ability to determine the days of the week within an eighty-thousand-year period suggests a rather simple algorithm. One divides the total number of days between ‘now’ and ‘then’ by seven. If there is no remainder, then that date falls on the same day as ‘now’; if the remainder is one, then that date is one day later; and so on. Notice that modular arithmetic is cyclic: it consists of repetitive patterns. Perhaps the twins were visualizing these patterns, either in the form of easily constructed charts, or some kind of ‘landscape’ like the spiral of integers shown on page 30 of Stewart’s book.

This leaves unanswered why the twins communicate in primes. But calendar arithmetic requires the prime of seven. And if one is thinking of modular arithmetic in general, modular division will produce neat cyclic patterns *only* if one uses prime numbers. Since the prime number seven helps the twins to retrieve dates, and consequently the events of particular days in their lives, other primes, they may have found, produce similar patterns to those that are so important for their acts of recollection. (*When they say about the matchsticks ‘111—37 three times’, note they are taking the prime 37, and multiplying by three.*) In fact, only the prime patterns could be ‘visualized’. The different
patterns produced by the different prime numbers (for example, multiplication tables) may be the pieces of visual information that they are communicating to each other when they repeat a given prime number. In short, modular arithmetic may help them to retrieve their past, and consequently the patterns created in using these calculations (which only occur with primes) may take on a particular significance for the twins.

By the use of such a modular arithmetic, Ian Stewart points out, one may rapidly arrive at a unique solution in situations that defeat any ‘ordinary’ arithmetic—in particular homing in (by the so-called ‘pigeon-hole principle’) on extremely large and (by conventional methods) incomputable primes.

If such methods, such visualizations, are regarded as algorithms, they are algorithms of a very peculiar sort—organized, not algebraically, but spatially, as trees, spirals, architectures, ‘thought-scenes’—configurations in a formal yet quasi-sensory mental space.

I have been excited by Israel Rosenfield’s comments, and Ian Stewart’s expositions of ‘higher’ (and especially modular) arithmetics, for these seem to promise, if not a ‘solution’, at least a powerful illumination of otherwise inexplicable powers, like those of the twins.

Such higher or deeper arithmetics were conceived, in principle, by Gauss in his *Disquisitiones Arithmeticae*, in 1801, but they have only been turned to practical realities in recent years. One has to wonder whether there may not be a ‘conventional’ arithmetic (that is, an arithmetic of operations)—often irritating to teacher and student, ‘unnatural’, and hard to learn—and also a deep arithmetic of the kind described by Gauss, which may be truly innate to the brain, as innate as Chomsky’s ‘deep’ syntax and generative grammars. Such an arithmetic, in minds like the twins’, could be dynamic and almost alive—globular clusters and nebulae of numbers whorling and evolving in an ever-expanding mental sky.

As already mentioned, after publication of ‘The Twins’ I received a great deal of communication both personal and scientific. Some dealt with the specific themes of ‘seeing’ or apprehending numbers, some with the sense or significance which might attach to this phenomenon, some with the general character of autistic dispositions and sensibilities and how they might be fostered or inhibited, and some with the question of identical twins. Especially interesting were the letters from parents of such children, the rarest and most remarkable from parents who had themselves been forced into reflection and research and who
had succeeded in combining the deepest feeling and involvement with a profound objectivity. In this category were the Parks, highly gifted parents of a highly gifted, but autistic, child (see C.C. Park, 1967, and D. Park, 1974, pp. 313-23). The Parks’ child ‘Ella’ was a talented drawer and was also highly gifted with numbers, especially in her earlier years. She was fascinated by the ‘order’ of numbers, especially primes. This peculiar feel for primes is evidently not uncommon. C.C. Park wrote to me of another autistic child she knew, who covered sheets of paper with numbers written down ‘compulsively’. ‘All were primes,’ she noted, and added: ‘They are windows into another world.’ Later she mentioned a recent experience with a young autistic man who was also fascinated by factors and primes, and how he instantly perceived these as ‘special’. Indeed the word ‘special’ must be used to elicit a reaction:

‘Anything special, Joe, about that number (4875)?’ Joe: ‘It’s just divisible by 13 and 25.’ Of another (7241): ‘It’s divisible by 13 and 557.’ And of 8741: ‘It’s a prime number.’

Park comments: ‘No one in his family reinforces his primes; they are a solitary pleasure.’

It is not clear, in these cases, how the answers are arrived at almost instantaneously: whether they are ‘worked out’, ‘known’ (remembered), or—somehow—just ‘seen’. What is clear is the peculiar sense of pleasure and significance attaching to primes. Some of this seems to go with a sense of formal beauty and symmetry, but some with a peculiar associational ‘meaning’ or ‘potency’. This was often called ‘magical’ in Ella’s case: numbers, especially primes, called up special thoughts, images, feelings, relationships—some almost too ‘special’ or ‘magical’ to be mentioned. This is well described in David Park’s paper (op. cit).

Kurt Godel, in a wholly general way, has discussed how numbers, especially primes, can serve as ‘markers’—for ideas, people, places, whatever; and such a Godelian marking would pave the way for an ‘arithmetisation’ or ‘numeralisation’ of the world (see E. Nagel and J.R. Newman, 1958). If this does occur, it is possible that the twins, and others like them, do not merely live in a world of numbers, but in a world, in the world, as numbers, their number-meditation or play being a sort of existential meditation—and, if one can understand it, or find the key (as David Park sometimes does), a strange and precise communication too.