

# Sacred Spaces and Places in Healing Dreams: Gene Expression and Brain Growth in Rehabilitation

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I was brutishly clubbed on the head in my sleep. I felt heavy and unable to move out of a cramped fetal position in the nightmarish darkness. I wanted to groan but could not. I did not know whether I was asleep or awake. But I must have opened one eye, at least momentarily, to glance at the dim luminous glow of a clock by my bed that registered about 2:30 A.M.

I awakened at about 4:30 A.M. with a strange sluggishness, stiffness, and awkwardness of movement. I could hardly roll out of bed. I thought I was suffering from a sudden attack of arthritis or post-polio syndrome. I staggered to the medicine cabinet to try out some new anti-inflammatory medication my primary physician had given me a few days before. I wanted to record the exact time I took the medicine to see how long it took to give me relief. There was no paper handy, so I tried to write “4:30” on the medicine package. But something was radically wrong with my writing; it was incredibly tiny and the numbers were written on top of each other! I thought it must be the unevenness of the writing surface on the medicine package. I finally found a sheet of paper, but my handwriting was no better—the numbers remained tiny, and I was almost amused to realize I probably was experiencing micrographia for some unknown reason. I was incredibly uncoordinated trying to take a shower and almost fell. It was a struggle to dress; my right leg could not find its way into my trousers. It was not till my wife awakened about two hours later that I realized I had badly slurred speech. A quick check of my face in the mirror revealed the truth: The right side of my face was pulled down completely out of its normal symmetry. I now knew I was experiencing a stroke. My wife Kathryn called the doctor and rushed me to the hospital in our van.

The CD player in our van automatically turned on, playing my favorite contemporary composer, Kitaro. One passage of the music

played a haunting drumbeat reminiscent of Native American music. Suddenly I was seized with a paroxysm of hot tears as I glanced over the pristine countryside of the San Louis Obispo area through which we were driving on the way to the hospital. I was experiencing the truth of the deep tragedy of the Indian Nation with what seemed to be a profound clarity—a cleansing of perception. Did not anyone else recognize the truth of this exquisite tragedy of the Indian Nation? Why was not something more being done to correct it! I saw the mortified fear in my wife’s face—she had never seen me crying in this way. She thought I was crying about myself and tried to reassure me. I had great difficulty trying to explain about the Indian Nation with my slurred speech. I saw her growing alarm as she thought I was surely going daft. I now realized I might be experiencing “affect lability” (a kind of emotional roller coaster), which is typical in stroke. I tried to calm down and smile to reassure her, but all that came out was a strange, strangled laughing along with the tears that I still could not control.

The music of Kitaro continues to move me to a mystical sense of hyperreality even today, many months after that fateful ride. It is the kernel of a personality change that is still taking place within me, as I carefully cultivate a greater accessibility and expression of my emotions, which my wife now greatly enjoys. Here is the full record of a series of recovery dreams I had during this period that seem to reflect Jung’s (1966) synthetic or constructive method of psychotherapy as well as Erickson’s (1959/1980) utilization or activity-dependent approach to healing and rehabilitation.

### THE BODY OUT OF CONTROL (FIRST WEEK AFTER THE STROKE):

I am driving on a freeway overpass, but there is an accident and a pileup of cars ahead. Some people had gotten out of their cars and gone to the railing to get out of the way. But I fear I cannot stop my car because of some weakness in my leg and may run into them. I greatly fear that a tragic accident is about to take place.

This dream relates to the real weakness I feel throughout my body, especially on the right side. It really is a good idea not to drive at this time. I tell this dream to my physical therapist, explaining how it was probably related to my primary physician’s having to report my stroke to the Department of Motor Vehicles (by law) and having my driver’s license restricted. She looked at me softly and sympathetically but quietly questioned, “Have you considered that the dream also could be reflect-

ing your cerebral-vascular accident, where the freeway was a blood vessel in your brain accidentally piling up blood corpuscles?”

“Well, yesh,” I slur with a crooked little smile, doing my best to make my face more symmetrical just to please her. “How come I did not think of that?”

### EMERGENCY SELF-OBSERVATION OF A LONELY RADAR (SECOND WEEK OF RECOVERY):

A small, lonely, emergency radar on an infinite, desolate, and dusty plain seemingly coughs and sputters erratically for a moment, and then shifts into sweeping the sky rapidly in a circular pattern, frantically but futilely seeking a response. Gradually, in the far distance, I see a response beginning to develop as an output image on a computer screen. The image is a 3-D wire mesh outline of a human head, rotating rapidly to provide a complete 360-degree view of the interior of the head. With growing excitement I realize that it is an MRI image of my own head that may enable me to see the exact area of my brain that was damaged by the stroke. I start to go lucid in the dream: I realize that I am dreaming, and if I can slow down the rotating image enough, I will be able to see exactly where the damage is to better guide my rehabilitation program. The rotating image does indeed slow down, and I am just about to see the damaged area in my left cerebral hemisphere when I realize, “Oh, no, I am waking up!” I lose the image.

I am at first greatly disappointed, once fully awakened, because I could not exactly locate the damaged area. But gradually tears of gratitude come as I realize the most important significance of this dream. The lonely radar is a metaphor for a signaling system becoming activated in the self-reflective capacity of my mind-brain. My brain realizes that it is still in an emergency situation, but enough recovery has taken place over the past two weeks so that at least a small radar is now in operation, seeking the information it needs to further direct its own self-repair.

It is well known that all cells of the brain and body are continually sending each other molecular messengers (neurotransmitters, hormones, growth factors, etc.) to direct development, adaptation, and repair. The desolate plain is the damaged area of my brain, where molecular signals from dead and still struggling neurons are thrashing about, seeking contact and connection to reestablish lines of communication for my recovery. The dream inspires me to redouble my daily rehabilitation

efforts in speech, memory, eye–hand coordination, balance, and mildly strengthening physical exercises. I begin to go on little unsupervised walks around the block, but I am not allowed to try to cross the street by myself yet.

My many rehabilitation therapists (occupational, speech, physical, neurological, etc.) congratulate me on my positive attitude. They really do not know half the story. My body is still very weak and uncoordinated. I have to hold the banister with two hands to get up and down stairs. My wife winces with worry as she watches me use both my arms to lift and haul my somewhat limp right leg into and out of our van. Paradoxically, her worried wince evokes a grim satisfaction in me, as I suddenly recall the analogous situation, about 30 years ago, when I lifted the famous Milton H. Erickson, M.D. (founder of The American Society of Clinical Hypnosis) out of his wheelchair and into his family's old station wagon to take him for a drive through the deserts around Phoenix and visit rock shops, which we both loved. On those occasions it was I who winced with worry, lest I hurt Erickson as I hauled him about.

Erickson, on the other hand, ever the healing mentor, tried to reassure me, his jaw firmly set in grim satisfaction, as he told me yet another story about his efforts at self-rehabilitation from his lifetime of coping with polio. Life, he would explain, actually is a continuous process of rehabilitation. Every day and every moment that we *consciously* choose to work cheerfully and creatively with our handicap (whatever it might be) rather than complain literally gives us “a leg up.” Getting in and out of an auto, he explained, can be *utilized as another opportunity* to gain yet another increment of muscle coordination and strength. This view was the essence of what he called his *naturalistic* or *utilization approach* (Erickson, 1958/1980, 1959/1980). I now call it “The Symptom Path to Enlightenment” (Rossi, 1996), whereby the *process of actively coping with our symptoms and problems* guides us and facilitates physical healing as well as further psychological development. This principle is the source of my positive attitude toward rehabilitation, as it is the source of Erickson's greatest legacy of healing to me, although I could not appreciate its significance 30 years ago. Into my current desperate situation comes the following compensatory dream of the gathering of the archetypal healing forces at the deepest level.

#### GATHERING THE ARCHETYPAL RESOURCES FOR HEALING (THIRD WEEK OF RECOVERY):

*Real-life circumstances of this dream:* A neurologist filling out a routine medical form asks me if my illness has resulted in a loss of physical

strength so that I can no longer do my job. I grimly grin at him with my best Ericksonian attitude and humorously respond, “Well, I’m not exactly an iron foundry worker, you know.” That night I had the following dream.

A huge Paul Bunyan–type man is using gigantic iron pliers and tongs to manipulate small metal objects. He is going to teach me how to do it skillfully. I am experiencing great awe that he notices me, and I feel very grateful about the prospect of his help.

I interpret this dream figure to be analogous to my occupational therapist, who is, in reality, assessing and facilitating recovery of my damaged hand–eye coordination by giving me many tasks involving puzzles, picking up small metal objects with tweezers, etc. I tell him this dream and explain my interpretation: Paul Bunyan is a metaphor of an inner implicit healing process operating via activity-dependent gene expression and neurogenesis that hopefully are now being activated by all this occupational therapy to repair my brain. He has never heard of this neuroscience concept of rehabilitation, so I tell him that my new book (Rossi, 2002) is coming out soon and he can read about it. I’m just too exhausted to try to explain it all right now.

As I continue to replay this dream in active imagination, the Paul Bunyan figure becomes evocative of the archetype of Vulcan (the Roman god of fire and metalworking). My Vulcan looks somewhat like Mr. Spock of *Star Trek* fame, except that he is Chinese bloodred orange, with a thunderous body stretching from the center of the earth to the sky. He has huge, massive muscles and an impassive mien. He does not speak, and he hardly notices me, but I am given to understand that he actually is a genial gene genie who is ready, available, and fully capable of firing the sources of life, should he be called.

OK, so I’m calling, now! After a week or so of watching him do nothing but stand there silently poised with his huge iron tools, the Vulcan figure finally becomes activated in my imagination. One morning I awaken with grateful tears when I see Vulcan pounding a huge glowing gold ingot on a mighty anvil, flashing lightning leaping about with every stroke. I continue to gain strengthening reassurance as I witness his continuing methodical pounding whenever I call him forth in my active imagination.

Jung (1959) describes Vulcan as follows:

We learn that the lowest sphere corresponds to Vulcan, the earthy fire; the second to Mercurius, the vegetative life-spirit; the

third to the moon, the female, psychic principle; the fourth to the sun, the male, spiritual principle. It is evident from Maier's commentary that he is concerned, on the one hand, with the four *elements* and, on the other, with the four kinds of *fire*, which are responsible for producing different states of aggregation. His *ignis elementalis re et nomine* would, according to its place in the sequence, correspond to Vulcan. . . . The idea is . . . the elements or states of aggregation can be reduced to a common denominator. Today we know that the common factor to antagonistic elements is *molecular movement*, and that the states of aggregation correspond to different degrees of this movement. Molecular movement corresponds to a certain quantum of energy. One of the stepping-stones to the modern concept of energy is Stahl's phlogiston theory, which is based on the alchemical premises discussed above. We can see in them, therefore, the earliest beginnings of a theory of energy. (pp. 249–251)

How would we update Jung's concept of the "molecular movement . . . the elements or states of aggregation [that] can be reduced to a common denominator"? One way of understanding the common denominator of these elements of molecular aggregation that are fundamental to the sources of life is to regard them as genes. How does this concept relate to my concern with rehabilitation? This healing dream implies that rehabilitation will be facilitated by my being *actively engaged in exercises of active imagination*, like manipulating the tongs, as illustrated by the Paul Bunyan figure representing the archetypal Vulcan.

This process, ironically, is the subject of my new book (Rossi, 2002), which I completed a few months before my stroke. Therein I discuss the possible molecular mechanism of rehabilitation via *activity-dependent gene expression*. It is now believed that facilitating gene expression, neurogenesis, and stem cell differentiation and maturation into newly functioning tissues via *activity-dependent cognitive–emotional–behavioral experiences* is a basic mechanism of healing that makes rehabilitation possible. For example, patients with severe trauma resulting in loss or paralysis of sensory–motor functions due to physical injury, cardiovascular accidents, stroke, etc., can recover their abilities via occupational and physical therapy, which work primarily by *activating their behavior*. Until recently, this molecular–genomic mechanism of rehabilitative healing via behavioral activation was not understood. *The new neuroscience hypothesis is that behavioral activation initiates activity-dependent gene expression that, in turn, generates the protein synthesis that facilitates the healing processes of brain plasticity (i.e., the generation of new synapses and*

*neurons) and stem cell differentiation into new tissues.*

We do not yet know the full range and limitations of this new neuroscience approach to healing and rehabilitation. Intense research efforts are now underway to discover the optimal conditions whereby cognitive-behavioral stimulation can evoke *activity-dependent gene expression, brain plasticity, and physical healing* (Kempermann et al., 1997, 1999). It is now known, for example, that when experimental animals experience *novelty, environmental enrichment, and physical exercise*, the zif-268 gene is expressed during their REM (dream) sleep (Ribeiro et al., 1999, 2004). Zif-268 gene expression is associated with the generation of proteins and growth factors that facilitate synaptogenesis and neurogenesis—literally, brain growth. I generalize this finding to the human level by describing it as the *novelty-numinosum-neurogenesis effect*, which I propose (Rossi, 2000a, 2000b, 2002) is an emerging neuroscience foundation for Jung's (1966) synthetic or constructive method as well as Erickson's (1958/1980) naturalistic and utilization approach to healing and rehabilitation. In my most recent book (Rossi, 2002) I generalize this idea of healing to the cultural and spiritual arts, as follows:

*The Creative Replay of the Novelty-Numinosum-Neurogenesis Effect in the Arts, Humanities, and Cultural Rituals: Enriching life experiences that evoke the novelty-numinosum-neurogenesis effect during active imagination, creative moments of art, music, dance, drama, humor, literature, spirituality, awe, joy, and cultural rituals can optimize the psychosocial genomics of consciousness, personal relationships, and healing.*

The entire history of human approaches to healing that evoke the novelty-numinosum-neurogenesis effect—from ancient spiritual rituals of exorcism, shamanism, fire walking, to the still “mysterious” methods of acupuncture, energy medicine, and neurofeedback—is the data base for this hypothesis. *Psychobiological healing during ecstatic religious experiences of the numinosum involving a combined sense of fascination, the mysterious, and the tremendous has much in common with modern rituals of healing associated with the self-help groups, twelve-step programs, and the so-called “miracle cures” of therapeutic hypnosis.* I hypothesize that just as negative states of emotional arousal can evoke the psychogenomic network to initiate gene expression cascades leading to the overproduction of stress proteins and illness, so can positive psychological experiences initiate the novelty-numinosum-neurogenesis effect to facilitate gene expression, neurogenesis, problem solving, and healing. (p. 243)

## A DREAM OF NUMINOUS BEAUTY AND CLARITY (FOURTH WEEK OF RECOVERY):

I enjoy the numinous beauty and wonderment of looking through a new clear crystal cover on our swim spa, seeing the delightful clean, light blue water in the sparkling sunlight.

We actually do not have such a crystal cover over our swim spa, but one does not have to be a rocket scientist to realize that this dream is a metaphor for the clarity of sunlight coming into the waters of my brain. A battery of psychological tests administered to me at this time tells the story of my mental status in a stark manner that clearly outlines my assets and deficits. The good news is that my *abstract reasoning* is at the 99th percentile level, and my capacity for *mental organization* is at the 97th percentile. The bad news is that I am way below normal in *perception and discrimination* at the 45th percentile level, and, even worse, my *short-term memory* is down to the 37th percentile.

I spend several afternoons sitting silently in the sunlight gazing into the clear crystal water of our swim spa with a deep hunger to drink it all in somehow to assuage my still stunned brain. I smile at the surrounding little meditation paths I built when I was strong, years ago, in our backyard garden, with their statues of the Buddha and Quan Yin.

After I repeatedly replay this dream of the crystal spa cover in active imagination, with wisps of poetry throughout the day, for many days, it finally dawns on me that my hunger for, and preoccupation with, the numinous experience of crystal clarity may be an example of the novelty–numinosum–neurogenesis effect. The psychological experience of numinous beauty, wonderment, and crystal clarity may correspond to the activation of gene expression, synaptogenesis, and neurogenesis to facilitate the healing of my below-par perception and discrimination. Rudolph Otto (1923/1950) formulated the concept of the numinosum to describe the common denominator of all original spiritual experience as consisting of experiences of *fascination*, *mystery*, and *tremendousness*. I muse over these three facets that characterize the numinosum in spiritual development and the three facets of *novelty*, *environmental enrichment*, and *physical exercise* that neuroscience research now finds characteristic of the daily development of consciousness (memory, learning, etc.) via activity-dependent gene expression and neurogenesis.

After replaying the numinous beauty of this dream for weeks, I have a particularly vivid experience of it, an epiphany of sorts, while listening to Carlo Ponti, Jr., conducting The Russian National Orches-

tra's performance of Mussorgsky's "Pictures at an Exhibition" at California Polytechnic University on Saturday evening, August 17, 2002. The program notes quote Mussorgsky's own description of his creative fervor while composing this piece: "Ideas, melodies, come to me of their own accord. . . . I gorge and overeat myself. I can hardly manage to put it all down on paper fast enough." Likewise, while listening to this performance, I have a similar experience in which I recognize how music, art, poetry, philosophy, and science all come together as one with my Italian heritage in a new theory of aesthetics: *The numinous experience of beauty could generate gene expression, neurogenesis, and the actual reconstruction of the brain during creative moments, described by John Keats as the equivalence of truth and beauty.* At this moment all these connections seem to be an astonishing reification of C. G. Jung's (1916/1960) concept of "The psychological 'transcendent function' [that] arises from a union of conscious and unconscious contents as well as the real and imaginary" (p. 69).

Is my repeated replaying of the numinous beauty and clarity of this dream a *novel, enriching mental exercise* that can facilitate neurogenesis so that my *perception and discrimination* will really improve? Can the numinous experiences of mind really facilitate physical healing of the brain and body in this way? I cannot really tell, yet. The next dream, however, certainly suggests continuing rehabilitation via the very acute perceptions and fine discriminations that are now taking place between the various sides of my personality in creative confrontation with each other.

### A LITTLE BUS RIDE WITH JUNG (FIFTH WEEK OF RECOVERY):

*Real-life circumstances:* Since my driver's license is restricted, I cannot drive and my wife is getting a bit burned out driving me to all my rehabilitation therapists every day. One of my physical therapists takes me on a few field trips walking through the city, learning how to negotiate street curbs, how not to bump into people, police, or telephone poles, and how to safely step on and off an escalator: "Pay full attention to getting your full foot squarely on the step!" I struggle haltingly, as if in a haze, with these amazingly complex techniques of daily living, but I fall only once during this period. True, I fall in the street right in front of a bus, but fortunately it was not moving at that moment. I vividly remember desperately shifting my body balance, as if in slow motion, to brake my fall with my hands and rump rather than risking more severe injury to my knees. As if from a great distance I heard a tremulous gasp of alarm and dismay from a crowd of people around me. Eventually my therapist decides I may be ready to try taking a bus by myself to at least

some of my therapy appointments. And so I dream:

My wife Kathryn, my daughter April, and I are talking in our living room. A patient (a diminutive, older, very shy woman) knocks on the door. I tell her to wait a moment as I look for a room in the back of the house that we can use for her therapy session.

The scene now changes: I am on a bus. In the seat across the aisle from where I am sitting is a large distinguished man, evidently a university professor type, but not really from the university. He is to be my new patient, and we are taking this bus to the new location of my office. As we travel together we talk casually but with carefully studied purpose in preparation for our first session. He is very kindly and listens compassionately as I try to give him the most adequate answers I can in response to his highly intelligent and penetrating questions regarding my professional qualifications to be his therapist, and so forth. Gradually I become subtly and humbly aware that I am in the presence of an intellect and a humanity that is vastly more profound than my own.

Intruding on our conversation is the diminutive woman patient who, I now realize, is sitting a few rows ahead of us. She continues with a quiet litany, as if to herself, over and over: "Oh, yes, I was Dr. Rossi's patient *some time ago*, and he was very good. But I remember a time when Dr Rossi was not well. His mind seemed a bit cloudy, and his speech was not clear. Oh, no, his mind was not always there! He really was not well enough to be seeing patients."

It seems as if all eyes and ears on the bus now are focused on me to pick up what my response will be to this intruding litany. Will I be irritated, try to ignore her, or deny what she is saying? I decide to be gracious and with good humor publicly accept the truth she is divulging. I try to put a good spin on it, however, by emphasizing her own words, saying, "Yes, what you say is really true; I was not well back then, but that was '*some time ago*.'" A sigh of relief seems to go through the people on the bus as everyone realizes that I am not as defensive as I might have been. I am basically telling the truth, even though it is difficult for me. The distinguished man immediately understands the situation completely, on all levels, and seems favorably impressed that I am probably OK.

The bus comes to what appears to be an exotic tropical garden on a college campus. This seems to be a good place where the large distinguished man and I can walk along well-manicured

paths as we engage in our first therapy session together. But I have never been in this place before, and I fear I may get lost in the meandering paths because I will be concentrating so intensely on our therapy work. I realize, however, that these paths are probably familiar to the distinguished man and all I need to do is carefully allow him to choose the way so I can follow along as he leads us correctly.

I spent many hours replaying this dream in active imagination with numerous variations over many days. The most numinous figure of the dream is the large distinguished man. But who is he? He is what Jung would call “A Big Fish. He would not suffer fools gladly.” Quietly, with a fresh flood of tears, the stately but haunting music from the film *A Matter of Heart* (a spiritual biography of Jung) comes to mind. The music identifies the large distinguished man as none other than Jung himself (or, rather, the Jung complex in my mind, if you will!). It is profoundly reassuring to experience such an inner mentor who could guide me, in the guise of a patient checking me out. Perhaps I could come out of this OK after all.

### CARING FOR A LOST INNER PERSONALITY (EIGHTH WEEK OF RECOVERY):

I am in the back seat of a car crowded with people. Suddenly the police force our car to stop and surround us with drawn guns to capture a dangerous person in the front seat. It is a tense and frightening moment, but I remain calm, cool, and competent as I carefully size up the situation. I surreptitiously open the back door a bit and signal the police not to shoot; I am confident that I can talk the dangerous fellow into giving up peacefully.

I then turn my full attention to the white frightened face of the dangerous fellow in the front seat—he is clutching a canvas bag with a hole burned through it by some acid he is hiding inside. He murmurs in a pathetic, faraway voice, “I want some more acid.” I think to myself, ‘Oh, my poor dear fellow, what would you want with more acid?’ But instead of confronting him with such a question, I simply smile gently and support him with the words, “Of course, let’s figure out together how we can get you the *kind of acid* you want so you can get the *kind of help* you really need.” I seem to be going lucid in this last part of the dream, wherein I am consciously using a therapeutic approach called “presupposition” or “reframing” (also “overlapping” or “hitchhiking one idea on another”). My plan is to carefully shift

him away from the *kind of acid* he says he wants toward the *kind of psychological help* he really needs.

I am very comfortable with this dream, which I recognize as part of the continuing saga of a highly introverted part of myself that seems to have had a hidden, independent existence since my earliest childhood. In reality, I was a rather clever child who played with chemistry sets and eventually contrived secretly to buy dangerous acids, manufacture my own gun powder, nitroglycerine, vacuum tubes, radios, batteries, a lathe to make my own chess pieces, etc. Miraculously, I never did hurt others or myself, although I was once expelled from grammar school on graduation day for exploding one of my bombs. The authorities did not take kindly to my way of celebrating. My mother never did connect the dots when she puzzled over the peculiar small holes in my clothing. She dutifully sewed them up, never realizing they actually were acid burns. It was a different story the day I made and liquefied chlorine gas, which eventually escaped and rusted all of my father's precision tools. I was beaten up pretty bad for that one.

The hurt introvert gave up his dangerous pursuits when at 12 he discovered Kant's *Critique of Pure Reason*, yoga, girls, the numinous mysteries of mind, and eventually psychology. That damn little introverted kid eventually did grow up a bit, but he remained a troublesome shadow who would occasionally verge on getting into stupid little scrapes in real life from which I would always have to rescue him. So, as I said, I feel very comfortable with this dream that restores me once again—well within my accustomed therapeutic role of taking care of my child self—before I was so rudely interrupted by the stroke.

It is probably no coincidence that this healing dream of the recovery of my more competent adult self comes after two months of rehabilitation. It is well known in many stroke rehabilitation programs that the amount of recovery within the first few months pretty much tells the story of how much healing the patient will experience. This clinical experience is now confirmed by neuroscience research on brain plasticity (brain growth) and healing that is well summarized by Henrietta van Praag et al. (2002):

Our findings demonstrate that newly generated cells mature into functional neurons in the adult mammalian brain. . . . We have identified one-month-old neurons with functional properties similar to those of mature dentate granule cells in the adult hippocampus. We also show that newly generated neurons are

initially smaller and reach a more mature morphology after 4 months. (p. 1030)

### A DREAM OF RECOVERY (ONE YEAR RECOVERY):

I was a mental patient in a gray, barren, and dark mental institution (as most of them are, in working reality). I walk along the main hall with a huge, disheveled man who is a mental patient and a friend of mine. I notice that my sensations are sharp, my perceptions are vibrant, and my mind is clear. No one in the hospital seems aware that I have recovered—I feel that I am well now. On a stairway up to the left is a column of ascending female patients, among whom is a dear, sad little girl (who reminds me of Anna Frank). I playfully toss her a pink rubber ball to try to cheer her up. On another stairway up on the right side is the office of the medical superintendent of the mental hospital. A nun standing outside his office confides to me that the medical superintendent has an interesting but little known personal history. It seems that he too was mentally ill, but he was able to keep his illness under control with his sensible and rational attitude. In fact, all who knew this medical superintendent had a deep love and respect for him because of his humble and helpful attitude to everyone.

At that point I turn to my disheveled friend and tell him in a happy voice, “My mind is clear now and I am well! The doctors are going to let me go home now.” (In this dream I did feel a wonderful clarity that I actually lost for a while after my stroke last April.) My friend turns to me and replies, “Well, of course they are going to let you go. You were able to explain yourself to them clearly so that they could understand who you are.” The sad implication of his words was that he and the other patients would have to remain in the hospital, diagnosed as mentally ill because they could not explain themselves.

I believe this dream set the feeling tone of my 70th birthday. My basic feeling is one of *gratitude*—gratitude for my recovery, my remarkable luck of living in such a beautiful place with such a wonderful wife, and gratitude for my returning mental faculties, so I could write this paper. My wife tells me that in fact she has noticed over the past few weeks that I really am clear, full showing recovery from my stroke. She can no longer see any lingering after-effects of the stroke. She is almost completely right in this. A recent retest documents that after 15 months of rehabilitation, both of my major stroke-induced cognitive deficits have improved dramatically: My *perception and*

*discrimination* improved to the 90th percentile from the 45th, and my *short-term memory* improved to the 66th percentile from the 37th.

## SUMMARY

In an anecdotal report such as this, it is difficult to determine the healing factors that contributed to mental and physical rehabilitation. Nevertheless, here is a short list of what was important from my personal perspective and what remains to be done from a scientific point of view:

- ♦ Accessing and reexperiencing the numinosum in repeated creative replay is the essence of the psychological, cultural, and spiritual approaches to healing. Notice how often I report being preoccupied with certain numinous experiences in dreams and active imagination that continue over days, weeks, and months during my rehabilitation. Active imagination that generates healing usually requires repeated exercises of novel, enriching, and positive inner experience. Replaying numinous dramas of healing that engage deep emotions, over and over, with many creative variations, allows a natural Darwinian process of variation and selection of optimal healing strategies to take place on all levels, from mind to gene, throughout the days, weeks, and months of rehabilitation.
- ♦ I hypothesize that this creative replay evokes gene expression, brain plasticity, and healing via stem cell differentiation throughout the brain and body; this is the essence of what I call the “novelty–numinosum–neurogenesis effect.” Although the subjective aspects of human consciousness, meaning, and myth making are often disparaged in current scientific literature, the subjective creative experiences of consciousness that replay the novelty–numinosum–neurogenesis effect are here regarded as the essence of the *circumabulatio*, the “royal road” to mind–body healing and rehabilitation.
- ♦ Although we can cite many scholarly sources from the history of therapeutic hypnosis, psychoanalytic traditions, and current neuroscience to support these ideas about mind–body communication and the psychosocial genomics of healing via the novelty–numinosum–neurogenesis effect, these conceptions remain speculative until they receive experimental confirmation. The most direct route to such experimental confirmation is to measure gene expression, brain plasticity, and stem cell differentiation and healing in response to creative replays of the novelty–numinosum–neurogenesis effect.

- ♦ Experimental confirmation of the value of creative replay of the novelty–numinosum–neurogenesis effect in the arts, humanities, and cultural rituals would have profound implications for an understanding of the role of consciousness in human nature. It would mean that enriching life experiences that evoke the novelty–numinosum–neurogenesis effect during creative moments of art, music, dance, drama, humor, literature, spirituality, awe, joy, and cultural rituals could optimize the psychosocial genomics of consciousness, personal relationships, and healing. In essence, it would mean that there is something more involved than “art for the sake of art.” Rather, it would mean “art for the sake of building a better brain” in the daily construction and reconstruction of our lives.
  
- ♦ This perspective contains the seed of a new theory of aesthetics that reifies Keats’s poetic and philosophical conundrum, “Beauty is truth, truth beauty—that is all Ye know on earth, and all ye need to know.” If beauty and truth are both numinous experiences that activate gene expression and brain plasticity, then beauty could actually reconstruct our brain to generate new experiences of truth, and vice versa. This view takes us quite beyond my personal story to a deepening exploration of consciousness, creativity, science, and spirit in the future.

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#### FURTHER READING

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