

Extrait de l'introduction du dernier livre de Norman Doidge « The Brain's Ways of Healing ».

« Une raison pour laquelle les cliniciens ont négligé d'utiliser le corps pour traiter le cerveau est la tendance récente de voir le cerveau comme plus complexe que le corps et à le rapprocher de l'« essence de qui nous sommes ». Dans cette vision courante, « nous sommes » nos cerveaux, le cerveau est le contrôleur en chef et le corps est son sujet, essentiellement là pour suivre les ordres du maître.

Cette vision des choses a été acceptée parce qu'il y a 150 ans, des neurologues et des neuro-scientistes commencèrent à mettre en évidence les façons dont le cerveau contrôlait le corps. Ils apprirent que si un patient qui a eu une attaque ne pouvait pas bouger le pied, le problème n'était pas à chercher dans le pied – comme le patient pourtant le croyait – mais au niveau des aires du cerveau qui concernent le pied.

Durant les 19^{ème} et 20^{ème} siècles, les neuro-scientistes établirent des cartes montrant où le corps était représenté dans le cerveau. Les risques inhérents à cette activité étaient de croire que le cerveau était le lieu où tout se passait, l'endroit où toute action avait lieu ; quelques-uns commencèrent à parler du cerveau comme s'il ne faisait pas partie du corps ou comme si le corps n'était qu'un vague appendice du cerveau, une quelconque infrastructure lui servant uniquement de support.

Mais cette vision d'un cerveau « impérial » n'est pas exacte. En effet, les cerveaux ont évolué plusieurs milliers d'années après que les corps des humains aient acquis leur forme actuelle. Une fois que les corps « furent dotés de cerveaux », ils changèrent et corps et cerveau interagirent et s'adaptèrent l'un à l'autre. Non seulement le cerveau envoie des signaux au corps pour l'influencer, mais le corps envoie lui aussi des signaux au cerveau qui ont un effet sur lui. Ainsi, il y a une constante et bi-directionnelle communication entre eux.

Le corps abonde en neurones, l'intestin tout seul en possédant une

centaine de millions.. Il n'y a que dans les livres d'anatomie que le cerveau est isolé du corps et confiné à la tête ! Et si l'on regarde comment il fonctionne, le cerveau est toujours en lien au corps et, par le biais des sens, au monde extérieur.

Les neuroplasticiens ont appris à utiliser ces voies reliant le corps au cerveau pour faciliter la guérison. Ainsi, lorsqu'une personne qui a eu une attaque montre des difficultés à utiliser son pied à cause des dommages causés à son cerveau, bouger le pied peut parfois éveiller des circuits dormants du cerveau blessé.

Le corps et l'esprit deviennent des partenaires dans la guérison du cerveau et puisque ces approches sont non-invasives, les effets secondaires sont extrêmement rares.

(...)

Si l'idée d'un traitement puissant et cependant non-invasif du cerveau semble trop belle pour être vraie, c'est pour des raisons historiques. La médecine moderne est née avec la science moderne, laquelle était conçue comme une technique mise au service de la conquête de la nature pour – comme Francis Bacon, l'un de ses fondateurs, le dit : le bien de la propriété de l'homme.

Cette idée de conquête donna naissance à un grand nombre de métaphores militaires, qui sont utilisées tous les jours dans la pratique médicale, comme le montre Abraham Fuks, ancien doyen de médecine de l'Université McGill : la médecine devint une « bataille contre la maladie » ; les médicaments des « munitions magiques » ; des programmes médicaux spécifiques mènent « une guerre contre le cancer » et un « combat le sida » sur prescription des médecins qui puisent dans l'« arsenal » thérapeutique. Cet « arsenal », comme les médecins nomment leur sac à « trucs » thérapeutiques, honorent les traitements invasifs high-tech comment étant scientifiquement plus sérieux que les traitements non-invasifs.

Il y a sans aucun doute un temps qui nécessite une attitude « martiale » en médecine, spécialement en médecine d'urgence : si un vaisseau sanguin explose dans le cerveau, le patient a besoin d'une chirurgie invasive et d'un neurochirurgien avec des nerfs d'acier pour l'opérer.

Mais la métaphore citée plus haut crée aussi des problèmes car l'idée même qu'il puisse être possible de conquérir la nature est un espoir naïf et vain. Car dans cette métaphore, le corps du patient est bien moins qu'un allier sur le champ de bataille et le patient est réduit à la passivité d'un spectateur impuissant, assistant à ce qui va décider de son sort dans la confrontation entre les deux grands antagonistes que sont le médecin et la maladie. Cette attitude générale a même fini par influencer la façon dont beaucoup de médecins s'entretiennent de nos jours avec leurs patients, interrompant leur récit alors qu'ils sont en train de parler, bien souvent parce que le médecin « high-tech² s'intéresse bien moins à leur récit qu'à leurs tests de laboratoire...

Les approches neuroplastiques, de leur côté, requièrent l'engagement actif de tout ce qu'est le patient : esprit, cerveau et corps dans sa prise en soin de lui-même. De telles approches rappellent non seulement la médecine orientale mais aussi la médecine de l'Occident elle-même. En effet, Hippocrate, le père de la médecine scientifique, voyait le corps comme le « grand guérisseur » et considérait que médecin et patient étaient amenés à collaborer, avec l'aide de la nature pour aider le corps à activer ses propres capacités de guérison.

Dans cette approche, le professionnel de la santé ne se concentre plus seulement sur les déficits que présente le patient – aussi importants qu'ils puissent être – mais recherche aussi des zones saines du cerveau qui seraient endormies et des capacités existantes qui puissent être activées et prendre part au rétablissement souhaité.

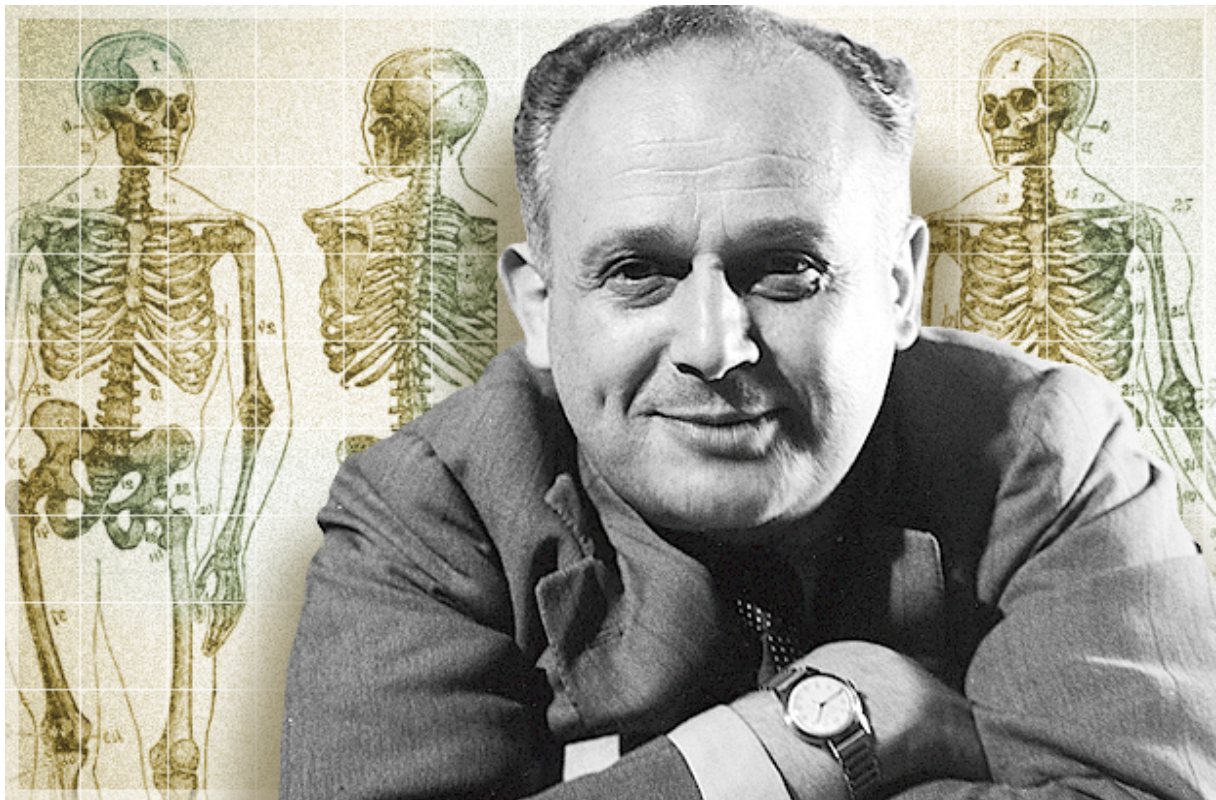
Les propos ci-dessus ne plaident pas pour le remplacement du « nihilisme neurologique » du passé par un « utopianisme neurologique » tout aussi extrême, troquant ainsi un pessimisme déplacé contre un faux espoir. Car pour être très valables, les découvertes des nouvelles façons de guérir le cerveau (et donc le corps ! Ndt) ne sont pas une garantie que tous les patients puissent être aidés tout le temps. Bien souvent, nous ne savons tout simplement pas ce qui va se passer, jusqu'à ce qu'un jour, une personne, soutenue par un professionnel de la santé compétent et reconnu, soit partante pour tenter l'une de ces nouvelles approches.

Le terme « heal » (guérir) vient de l'anglais ancien « haelan » qui ne recouvre pas seulement l'idée de soigner mais de redonner l'entièreté (to make whole), rendre son intégrité. Nous sommes bien loin l'idée de la conception « militaire » du soin (qui se caractérise plutôt par les notions de « réparation » et de « correction »), avec pour corollaire les idées de division et de conquête. »

“She will dance at her wedding” Healing the girl born without part of her brain

The origin of Moshe Feldenkrais' therapeutic method reads more like a spy thriller than a neuroscience textbook

[Norman Doidge](#)



Moshe Feldenkrais (Credit: © International Feldenkrais Federation Archive/Photo montage by Salon)

Excerpted from [“The Brain's Way of Healing: Remarkable Discoveries and Recoveries From the Frontiers of Neuroplasticity”](#)

Origins of the Feldenkrais Method

When Moshe Feldenkrais was fourteen, after years of Jews being attacked in anti-Semitic Russian pogroms, he set out alone to walk from Belarus to Palestine. A pistol in his boot, a math text in his sack, and with no official documents or papers, he crossed marshes and endured temperatures of 40 degrees below as he traversed the Russian frontier in the winter of 1918–19. As he walked from village to village, other Jewish children, intrigued, joined him. At one point, to survive, they joined a traveling circus, where the acrobats taught Moshe tumbling and how to fall safely—skills he would one day perfect with his judo. By the time he reached Cracow, fifty children had joined the much-admired boy on his way to Palestine, then more, until over two hundred young people were following him. Eventually adults joined his children’s march through central Europe to Italy and the Adriatic, where they boarded a boat. It arrived in Palestine in 1919, in late summer.

Like many new arrivals, Feldenkrais was penniless. He worked as a laborer and slept in a tent. In 1923 he began to attend high school and supported himself by tutoring children with whom other tutors had failed; he displayed an early aptitude for helping people overcome blocks in the learning process. In the 1920s Arabs attacked Jewish villages and cities in British Mandate Palestine. Feldenkrais’s cousin Fischel was among those killed. The Jews requested from the British either more protection or the right to arm themselves—and were refused. So young Feldenkrais began to study how to defend himself without a weapon. Arab attackers usually came at their opponents with knives, striking from above, and directing their thrusts to the neck or solar plexus. Many Jews were killed in these encounters. Feldenkrais tried to teach them to block a blow, then grab and twist the attacker’s arm so that he dropped the knife. But his students were unable to resist the natural, anxious neurological reflex response of lifting their forearms up to protect their faces or turning their backs to the blow. So instead of fighting these spontaneous responses of the nervous system, Feldenkrais designed a block that used them. He now insisted that his students, when attacked, follow the instinctual tendency to block their faces, and he then sculpted that movement into a better block. He then photographed people being attacked from different angles and crafted blocks that molded their frightened, spontaneous reactions into effective defenses. The method worked and would become a template for his future approach to the nervous system: work with it, not against it.

In 1929 he circulated “Jiu-Jitsu and Self-Defense,” in Hebrew, the first of his many books on unarmed combat. It became the first self-defense manual used to train the armed forces of the fledgling Jewish state. That was the year he injured his knee, and while recuperating, he became fascinated with mind-body medicine and the unconscious. He wrote two chapters for a book called “Autosuggestion,” which included a translation

of Émile Coué's treatise on hypnosis. In 1930 he moved to Paris, where he completed a degree in engineering and began a Ph.D. in physics under Joliot-Curie (whose lab was the first to split an atom of uranium, setting up a chain reaction that released immense amounts of energy that came to be called nuclear power).

One day in 1933 he heard that Jigoro Kano, the founder of judo, was in Paris for a lecture. Kano was a very small, frail person who had often been attacked by others when younger. Judo, a modification of jujitsu, trained its practitioners to use an opponent's own power to knock him off balance and throw him. Judo, which means "the gentle way," was also a holistic way of life, both physical and mental. Feldenkrais showed Kano his book on hand-to-hand combat.

"Where did you get this?" asked Kano, pointing to a picture of the block Feldenkrais had developed to use one's spontaneous, anxious nervous response to protect oneself.

"I developed it," Feldenkrais answered.

"I don't believe you," said Kano. So Feldenkrais asked Kano to attack him with a knife, and Kano did. The knife went flying. Feldenkrais became one of Europe's first black belts and cofounded the Judo Club of France.

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When the war broke out, Feldenkrais was asked by Joliot-Curie to sneak French atomic secrets, and "heavy water", from his lab to the British, to keep them out of Nazi hands. He escaped the Gestapo, first on foot, hobbling on a knee that had been terribly damaged by a soccer injury, until he arrived at a port and boarded one of the last boats out of France. Arriving in England, a known scientist, he was recruited to work for British counterintelligence, to develop methods to track Nazi submarines threatening England.

During the war, he wrote a book that began as a meditation on the work of Freud, whom he greatly respected; unlike many clinicians of his time, Freud emphasized how the mind and the body always influence each other. But, Feldenkrais noted in *Body and Mature Behavior*, Freud's treatment, talk therapy, focused little on how anxiety or other emotions are expressed in posture and in the body, and Freud never suggested that analysts work on the body when treating mental problems. Feldenkrais believed that there were no purely psychic (i.e., mental) experiences: "The idea of two lives, somatic and psychic, has ... outlived its usefulness." The brain is always embodied, and our subjective experience always has a bodily component, just as all so-called bodily experiences have a mental component.

He developed a method that integrated the role of mental awareness, brain function and the body, to heal himself, and then others. One of his chief contributions was to understand that in injury or illness, the brain areas that process movement and sensation in the body become underutilized, and waste away in the "use it or lose it brain." The brain processing areas lose the ability to encode fine detail, and hence become "undifferentiated" with disuse. By doing slow movements, with great awareness, he found he was able to "re-differentiate" brain processing areas, and radically improve function.

When the war ended, Feldenkrais learned that all but a few of his relatives had been murdered by the Nazis. Luckily, his parents and sister had survived. He finished his Ph.D. dissertation and graduated. But on returning to France he found that the Nazis, with the collusion of a French and a Japanese judo colleague, had written him out of the history of the judo club he had cofounded, because he was a Jew. So he settled in London instead, pursued some inventions, wrote another book on judo, called "Higher Judo," and began a book, "The Potent Self," in which he articulated his healing method, which he was now using to help fellow scientists and friends. As a physicist, he had met the greats: Albert Einstein, Niels Bohr, Enrico Fermi, and Werner Heisenberg. He was deeply torn: should he continue in nuclear physics or, given the wonderful results he was getting, pursue healing? He chose healing. His mother said half-jokingly, "He could have got a Nobel Prize in physics, and instead he became a masseur."

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A Girl Missing Part of Her Brain

Feldenkrais's approach can radically change the life even of people who were born missing huge parts of the brain, by facilitating differentiation in the remaining brain areas. Elizabeth, whom I interviewed, was born missing a third of her cerebellum, a part of the brain that helps to coordinate and control the timing of movement, thought, balance, and attention. Without the cerebellum, a person has difficulty controlling all these mental functions. The cerebellum, which means "little brain" in Latin, is about the size of a peach and is tucked under the cerebral hemispheres, toward the back of the brain. Although it occupies only about 10 percent of the brain's volume, it contains almost 80 percent of the brain's neurons. The technical name for Elizabeth's condition is *cerebellar hypoplasia*, and there was no treatment known to change the course of the illness.

When she was in the womb, her mother felt there might be a problem, because Elizabeth hardly moved. When Elizabeth was born, she didn't move her eyes. They flickered and were not properly aligned, gazing in different directions. At one month, they rarely tracked objects. Her

parents were terrified she might not see normally. As she developed, it was clear she had a problem with her muscle tonus. At times she was very floppy, meaning she had too little or no muscle tension, but at other times she had too much tension and was “spastic,” making no exploratory, voluntary movements. She received conventional physiotherapy and occupational therapy, but the treatments were painful for her.

When Elizabeth was four months old, the chief pediatric neurologist at a major urban medical center tested the electrical activity of her brain. He told her parents that “her brain had not developed since birth, and there was no reason to believe that her brain would develop.” Most such children show persistent deficits, and it was believed the cerebellum shows limited plasticity. The doctor also told her parents that her condition was much like cerebral palsy, and he predicted that she would never be able to sit up, would be incontinent, and would have to be institutionalized. Her mother later recalled, “I remember he said, ‘The best we could hope for would be profound retardation.’” Elizabeth’s physicians were accurately describing their experience with such children who had conventional treatment—the only kind they knew about.

Still, her parents sought help. One day, a friend, an orthopedic surgeon, who knew of Feldenkrais’s work, said, “This guy can do things that no one else can.” When they heard that Feldenkrais was coming from Israel to a town near them to train practitioners—one of his major activities in the 1970s—they got an appointment.

When Feldenkrais met Elizabeth for the first time, she was thirteen months old and unable to creep or crawl. (Creeping, which usually precedes crawling, means scooting along on the stomach.) She could make only a single, voluntary movement: rolling over on one side. At her first hands on session with Feldenkrais, where he assessed her, she couldn’t stop crying. She had had many sessions with therapists, who had tried to get her to do things she was not ready to do developmentally. For instance, many therapists had tried to sit her up, over and over, and had failed. If the children’s bodies are spastic, these movements hurt them—hence the crying.

According to Feldenkrais, these attempts to leapfrog through development are a huge error because no one ever learned to walk by walking. Other skills have to be in place for a child to walk—skills adults don’t think about or remember learning, such as the ability to arch the back and lift the head. Only when all these pieces are in place will a child learn to walk, spontaneously. Feldenkrais saw that Elizabeth couldn’t lie comfortably on her belly, and when she was on her belly, she couldn’t lift her head at all.

He noticed her entire left side was in complete spasm, making her limbs rigid. Her neck was very tight, causing her pain. The fact that Elizabeth’s

entire left side was spastic indicated that her brain map for that side was undifferentiated, instead of having hundreds of areas for processing different types of movements.

Feldenkrais touched her, ever so gently, on her Achilles tendon, and she was so tormented he knew he first had to do something to resolve that pain: he would have to settle her brain because otherwise it would not be available for learning.

"After Moshe examined her," her father remembers, "he said to me, 'She has a problem and I can help her.' He was not bashful. My wife asked him to explain, and he proceeded to take our daughter's foot at the ankle and bend it back, and he took my finger, and he said, 'Touch this,' so that I could feel the knot of muscle, and he said, 'She can't creep, because it hurts her to bend her leg. If we soften that up, you will see she can bend her leg. And as we do this—soften her muscles—her whole demeanor will change.' But his technique did not massage the tense body part; rather, by moving her body, very slowly and gently, in a way that she could feel, he was able to send signals to her brain, to get it to stop signaling the muscles to contract. The physicist turned healer, had figured out how to use movement and awareness to turn off a switch in her brain. And it happened as he explained—a day or two after that, she was creeping." Soon she was crawling.

The next time Feldenkrais saw Elizabeth, one of his young pupils, Anat Baniel, happened to be there. Feldenkrais asked Baniel if she'd mind holding Elizabeth throughout the lesson. He gently touched her, to begin teaching her to differentiate very simple movements. Elizabeth became intrigued, attentive, happy.

Feldenkrais gently held her head and pulled it up and forward, very slowly and gently, to lengthen her spine. Usually, he had found this movement caused a natural arching of the back and led the pelvis to roll forward—a reaction that happens normally when a person is standing. Often, when working with children with cerebral palsy and others who couldn't walk, he would use this technique to engage the pelvis, so it would reflexively roll. But when he tried it on Elizabeth, Baniel felt no movement. Her pelvis was inert in Baniel's lap. So Baniel decided that when Feldenkrais pulled, she would gently roll Elizabeth's pelvis.

Suddenly there was movement throughout Elizabeth's spastic, locked, inert spine and body. They gently moved her spine again and again. Next, they tried subtle variations of the movement.

At the end of the session, Baniel gave Elizabeth back to her father. Usually in his arms Elizabeth would plop down on him, not able to control her head. But this time she arched her back, threw her head back, then

brought herself forward, again and again, facing her father. The subtle movements of the neck and spine that Feldenkrais and Baniel had done had awakened the idea of this movement and wired it into her brain. Now Elizabeth was moving the large muscles of her spine and back voluntarily, delighted with movement.

Yet there was still much to worry about: Elizabeth was profoundly disabled and carried a horrendous diagnosis. Feldenkrais could see that Elizabeth's parents were clearly concerned about her future. He usually didn't say a great deal on these occasions. But he judged a brain not by where a child was in her development but by whether, given stimulation appropriate to that stage of development, the child could learn. "She's a clever girl," he said. "She will dance at her wedding."

Feldenkrais returned to Israel. Over the next few years, her parents heroically and tirelessly did, and put up with, whatever it took to get Elizabeth to see him. They brought her to see him in hotel rooms whenever he came to the United States or Canada, and went to Israel three times, for two to four weeks of daily visits to Feldenkrais's office. In between these intensive visits, Elizabeth consolidated her gains with everyday activities.

When Feldenkrais was seventy-seven years old, he fell ill while traveling in a small town in Switzerland. He lost consciousness, and physicians discovered that he was bleeding inside his skull. A slow leak of blood had built up in the dura (the layer of connective tissue that surrounds the brain) and in the brain itself, putting pressure on it, endangering it. Unfortunately the only neurosurgeon in the town was traveling that weekend, so surgery to relieve the pressure caused by his "subdural bleed" was delayed.

Feldenkrais's colleagues concluded that his many injuries from all the throws, falls, and concussions in judo had made him vulnerable to the subdural bleed. He recovered in France, but perhaps because surgery was delayed, he suffered some brain damage. But soon he was once again giving what he called his one on one ["Functional Integration"](#) lessons. And sensing that his time was limited, he continued to teach as much as he could, hoping to transmit his latest findings.

Back in Israel, he had a stroke, which affected his speech. His students gave their master daily Functional Integration lessons. Now in his late seventies and ill, he directed more and more of the children who came to him to Baniel. Baniel gradually took over Elizabeth's care, flying in for three-week periods, giving her daily lessons. Elizabeth saw her on and off for years, and her progress quickened.

Today Elizabeth is in her thirties and has two graduate degrees. She's petite, at five feet tall, and has a sweet voice. She walks, moving so easily that an observer would never know she had once been destined to end up immobile, in an institution, severely mentally retarded—at best. "Moshe," she tells me, "said to my dad, 'When she is eighteen, nobody is going to know that anything happened.' And he was dead on." She remembers "tidbits" of those visits to Israel, "and I sort of remember Moshe, the white hair, the blue shirt, and how smoky it was in there"—Feldenkrais smoked during lessons—"him whispering things into my ear, calming me down."

Her two graduate degrees are from major universities: she earned a master's in Near Eastern Judaic studies; then wanting something practical, she did a master's in social work and got her license. She still has some residual symptoms of the cerebellar hypoplasia. She has a mild learning disorder with numbers, and so math and science are difficult. But other than that, she enjoys learning and being intellectual, and she became a voracious reader—all of Shakespeare, most of Tolstoy, and many other classics. Today she runs a small business and is happily married.

And yes, she danced at her wedding.

Excerpted from ["The Brain's Way of Healing: Remarkable Discoveries and Recoveries from the Frontiers of Neuroplasticity"](#) by Norman Doidge, M.D. Reprinted by arrangement with Viking, an imprint of Penguin Publishing Group, a division of Penguin Random House LLC. Copyright © 2015 by Norman Doidge.

Author of the *New York Times* Bestseller

THE BRAIN THAT CHANGES ITSELF

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REMARKABLE DISCOVERIES
and RECOVERIES *from the* FRONTIERS
of NEUROPLASTICITY

The
Brain's Way
of Healing