

## Case Description

### Michael – Incomplete paraplegia after a motorbike-accident – A five year learning process.

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Thanksto Irene Lober for translating

On March 26<sup>th</sup>, 1989, it was a Sunday, and he was 26 years old, Michael W. had a motorbike-accident with the result that his 12<sup>th</sup> thoracic and his first lumbar vertebrae were smashed diagonally. At the scene of the accident he had still been able to stand for a short while, and to sense his feet, but had already lost control over his bladder and bowel functions.

On Tuesday he was operated on: his spine was stabilized with two metal rods, and splinters taken from his hip bone. After the operation he wasn't able to move his legs nor to sense them. Six hours later, in a second operation, bone splinters and a haemorrhage were removed from his vertebral canal.

Afterwards Michael stayed in the Rehabilitation Centre of Langensteinbach (Germany) for six months. He was mobilised by physiotherapy and the Vojta-method. He soon started visualising that his big toe would move, and after a while it really did start moving. This stimulated him to visualise more complex movements. Vojta-treatment helped him to do some movements on his own.

At first Michael was wheelchair-bound. Then he gradually learned to walk a few steps with the help of leg-braces and crutches.

After six months he went back home, continuing physiotherapy and Vojta-sessions. In addition he regularly exercised in a fitness-gym, supervised by a physiotherapist, and he started playing basketball for wheelchair-drivers.

The metal rods broke and were removed in another operation. By that time his spine had grown solid enough to try all kinds of efforts.

As a former forestry-worker Michael got a half-time job in a forestry-school where he taught apprentices how to repair power-saws. In the afternoon he continued his rehabilitation-exercises.

We met the first time in August 1991 when Michael consulted me in my practice; at that time he was walking with the help of two braces and two crutches. He started coming for a FI-lesson and an ATM-lesson every week.

At that time he was hardly able to lift his head when lying supine, in spite of his thoroughly trained upper body. Yet he was able to stand his legs but he had to check with his eyes or hands “where they really are now”.

Bending his knee to the sides had a jerky quality—it didn't seem to be connected to his spine. When touched he had a furry sensation in parts of his legs and could thus roughly localize where my hands were.

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In the following sessions we worked in thematically parallel lines, mainly from the top downwards, all above the paralysis, with his head, shoulders, and chest. It was already in the second session that he felt a movement pass as far downward as the pelvis, which helped him to sit with less strain; he could lift his head with more ease and felt more connected to his lower spine and pelvis.

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On October 25<sup>th</sup>, it was his 6th FI-lesson, I had been working with him moving his shoulder and pelvis to and for.

lying on his left side,

Afterwards, on his back again, he experienced his right leg sensation of his leg for the first time. He didn't dare both legs side by side in order to check with his eyes.

leg a longer and thicker, he had a hard time to trust this feeling at first and had to lay

After the lesson with lots of movement on his side standing position by gently pushing his seventh vertebra, "standing", keeping a gentle pressure downward toward his pelvis, holding, and letting go. What happened was that Michael's legs started turning inward until the toes were pointing toward the ceiling, and the feet started bending—the legs were visibly getting ready to stand! He wasn't aware of these movements at first, but he felt something like an "inner shudder".

I wanted to convey to him a feeling for giving the information of is, holding, and letting go.

After three more attempts he perceived that his left knee left foot was bending. I kept repeating the same kind of pressure next to the 7<sup>th</sup> cervical, and Michael felt his pelvis responding, "as if it wanted to stand". He was aware that his buttock muscles were tightening and sensed a building-up of tension which was connecting his left foot to the inside of his lower leg, passing the knee on the outside of his left thigh, and reaching his buttock muscles.

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When I gently pressed more from behind the 7<sup>th</sup> cervical the muscles on the front side of his thigh were responding visibly, and he could also sense it.

From this lesson on all movements were visible, and I decided to document the process with a video camera, and started writing a diary after each lesson.

acted out spontaneously, therefore I started writing a diary after each lesson.

After another FI-lesson—this time on breathing,—I returned to gently pressing downward from the 7<sup>th</sup> cervical, and this time his legs are responding faster, and the position "standing" is reaching his lower back. When I apply the pressure only from the right side his right leg is organizing towards standing while his left leg starts bending, and vice versa. In this way, by alternately pressing downward from his 7<sup>th</sup> cervical the movement "walking" can be initiated. It was exciting and thrilling for both of us to witness the emerging of visible movement, to see and to feel his nervous system organizing itself.

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Although I didn't have a real explanation of how these movements about, I could see that my intention to stimulate the feeling of connectedness and stability in standing was carried out. With the remarkable difference that unlike in other persons' reactions Michael was transferring tiny impulses into large movement. He was then perfectly aware of these movements, but not able to intentionally inhibit them. Nevertheless he could make use of these movements in standing and walking: since that day he was able to climb a stair with two crutches and his right leg-brace unlocked, a task which he had tried in vain three months ago. By then he could walk a short distance without crutches, one brace unlocked; when he opened both braces and used his crutches he could

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walk up to 15 meters. Up to then he had very soon fallen over because he hadn't been able to keep up the concentration on organising the bending of both legs.

Following the procedure we had discovered when developing the movement "standing on one's legs when lying supine" was a good way to learn new movements:

1. I move Michael—he senses and watches the movement with his eyes.
2. I repeat the movement and he tries to sense it with one eye.
3. When he controls with eyes, he is able to stand his leg on his own.
4. He can stand his leg without control of eyes, and he knows where it is.
5. He tries to stand the leg without the steps 1-3, but fails: "My leg doesn't yet really know what to do".
6. Michael keeps looking and continues to stand his leg. After the third time he can do the movement without looking.

I end each lesson with an integrative movement from the previous ones, and I observe that less and less pressure is needed to stimulate a clear response which in turn triggers reactions reaching far upwards and downwards.

Although Michael's progress was visible his health insurance was not willing to pay for any of his expenses.

Since we have started working together Michael had repeatedly observed "a sudden leap in muscular coordination" on various levels: his walking felt safer so that he walked without crutches for a short distance outside and on level ground. At this workplace he succeeded walking around and carrying things with both his hands, and, at the same time, think ahead and plan the next step at the workbench. A sequence of movements became habitual. In the carnival season he started enjoying dancing. His masseur reported that his back muscles had grown very much stronger. At the fitness-centre his capacity for lifting weights with his legs doubled sometimes within two days (what had been impossible on Monday was successfully performed on Wednesday).

Already in 1992 Michael was able to "somehow" counteract stumbling when he walked without crutches—it worked all by itself. It has been in a basketball-match that his right foot had suddenly dashed out to prevent a fall when his wheelchair was about to turnover.

When we started our work together Michael had not been able to sense the lower part of his body when, at the beginning of a lesson, he was just lying on his back and scanning his position. In the meantime he had discovered means to become aware of these parts:

1. He learned to sense himself via tension and relaxation.
2. After two FI-lessons he was able to feel the differences in weight and length in his lower extremities.
3. In February 1992, when sensing his body after a lesson, he experienced a feeling of warmth in all of his body, getting a "warmth-picture" of his whole body.
4. When standing after a lesson he started experiencing the pressure on his feet as a "tingling", and was thus able to feel where they were.

In March and April 1992, we work on the movement of crawling and creeping, both in FI and ATM. There is a fast "understanding" of these movements, as coherence of these movements, as when he observes in the second FI-lesson: "I am aware of that when I turn my head this way, the opposite leg gets longer, and the leg on the same side starts bending".

I can initiate the whole pattern from any part of his “permeated” in a FI-lesson. As in a reflex, visible movement is being performed without him being able to inhibit it.

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To give an example: Michael is lying prone. I gently lift his right shoulder blade towards his spine, and his right knee to the side and push from the knee towards his pelvis, emphasizing the correspondent movement in his spine. After that the complete movement is triggered, as in a reflex from wherever I touch his single vertebra.

this right shoulder several times, and varying the direction. I bend his right knee again with slightly varying emphasis on the correspondent movement-pattern of crawling can be initiated from his shoulder or from any

In autumn 1992 Michael takes part in a sailing trip along the coast of the Côte d’Azur. While on the boat he is neither using his wheelchair nor his crutches, nor even his leg-braces. He is moving around without his walking-aids, and is keeping his balance by sticking out on the boat. He even dares swimming again.

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Up to now I hadn’t found any real good answers to the question of what is happening in the nervous system to make gentle pressure result in complex and identifiable movement-patterns?

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At an Advanced Training in Munich I meet Yochanan Rywerant and tell him about my work with Michael. He talks about a lack of inhibition and that the younger layer of the brain does not have control yet over the older one. In none of the lessons I can experience and realise the importance of inhibition in movements. This and the talks with Yochanan help me to find more easily passages in Feldenkrais’ writings referring to my problem, and also giving answers.

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In his book “The Elusive Obvious” p. 74, he writes: “Your brain, and mine, have a very long history. Our nervous systems are among the most complex structures in existence. They have very old layers. Each new layer is a formation that functions more finely. The older are primitive, and abrupt in the all-or-nothing way. Each layer checks the older ones and supersedes them. The newer the formation the finer its function. It makes a action more graded, more differentiated. The older structures function more reliably faster and need less apprenticeship. The newer layers switch themselves off and allow the former more reliable swifter formation to take over and assure survival. The finer, more varied newer parts will take over on will take over. The newer the neural over once the emergency has ended. The old structures are not destroyed, they just become latent, less obvious but essential in an emergency. An ysituation that cannot be dealt with at leisure will produce a regression, i.e. the older formation will take over. The newer the neural structure is, the slower it is. Gradation and variety in need time and apprenticeship for deliberation and choice, following the weighing up of the pros and cons.”

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With Michael’s case of incomplete paraplegia I can start from the assumption that the outer (and younger) formations of his spinal cord were the first to be damaged by injury, and that there was only an insufficient, and damaged, connection to the older formations underneath. The communication between inner and outer formations was as limited or even interrupted in some areas.

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Although Michael wasn't able at first to inhibit the spontaneous movements, i.e. with his cortical formations, he started applying what he learned in each lesson, and integrated it in his daily life.

His coordination-leaps could be explained as the result of these continued efforts.

But what we wanted was that Michael's younger, cortical structures would regain control over the spontaneously triggered movements of the older structures. We wanted a new transfer from the deeper formations outward to the newer ones.

Feldenkrais comments on this topic in his book "The Potent Self" p. 86ff (chapter 10):

"Motor cells tend to be active on their own accord, at least during the growing period, creating exploratory and investigatory activity at the slightest provocation from the outside world or internal change. New patterns are thus formed, and they tend to repeat themselves. The tendency to repetition is so great if the environment does not prevent the enactment of a new pattern (by fostering the habitual, and therefore preferred other activity, or by directly inhibiting the tentative new pattern) it will enact itself at the first opportunity when our vigilances lack off—during sleep, tiredness, or failing health."... "The first abnormal stage of fatigue in motor cells is the loss of the power of inhibition over them. Fatigued cells keep on producing impulses, resulting in feeble contractions, twitches, and finally complete cramps of the muscles."... "The conscious control is overruling... the overworked centres of fatigue, and the inhibited ones suffer from dystrophy, and the whole spatial body image is distorted. The body sensation is found unreliable and is compensated for by an increased use of the eyes to supplement and correct the faulty muscular account of the body state in space."

(Compare Michael's usage of his eyes to learn or verify new movements, p. 3)

The above and other statements of Feldenkrais helped to clarify my experiences, and to substantiate them in a theory. They also indicated our further course of research.

Since 1992 we had been trying again and again to find a way to inhibit this spontaneous movements. At first Michael succeeded only when he imagined himself to be paralysed, but when I continued to give the information 'standing' with my hands at his 7<sup>th</sup> cervical, a spontaneous movement was soon building up again, after a few seconds.

In November 1992 I focus on working with Michael's shoulder, neck, and thorax, and when I ask him to stay with his attention only in the upper part of his body, his legs remain quiet, to my surprise. It seems that his spontaneous movements are also inhibited when he can keep his attention in another part of his body.

In 1993 he succeeded in keeping his legs completely quiet for a full lesson, without any direction of mine. At that time intentional inhibition was becoming feasible, also because his body awareness had considerably grown within the last year. He had reached a new and higher level of control, which he could dispose of most of the time. Yet any unfamiliar pattern of movement would cause spontaneous movement to reappear.

Unfortunately his increased body awareness went together with a disturbing sensation of pins and needles in his feet, and increasingly, with pain. In spring 1994 Michael went to a pain clinic to get his lumbal nerve frozen, seemingly the cause of his constant pain, but the pain relieving effect only lasted for a few weeks.

It seemed to me that his pain was changing together with his increasing body awareness, and with differentiation in perception. I compressed the same area in his hands.

With his pain in mind and in order to deepen his inner sensitivity, I started experimenting with 'global' movements, i.e. everything move together. I got the idea in spring 1997, after an Advanced Training with Chava Shelhav. Michael was either laying his side or supine, and this new approach quite rapidly changed the nature of his pain, and I made the bad tingling almost disappear. He was relaxing to an extent that he kept falling asleep on the spot.

In spring 1993, a long time before that, Michael had spent several weeks at Langensteinbach in the centre where he had also stayed for his rehabilitation. He had participated in a research project, in which patients were suspended from their shoulders in a hanging device above a running board to stimulate the feet and legs to remember and to relearn walking movements. Michael had had applied his Feldenkrais-experiences there, and he gained more safety. I had presented our work to Prof. W. (Bonn), which had earned me an invitation to describe our work in the course of a lecture that was to include corroborating video footage. Prof. W. had not been familiar with the Feldenkrais-method. He had been surprised to see that Michael was able to walk without having neurological reflexes in his legs and feet. He had maintained that Michael was only able to walk because he was relying on his visual control. Prof. W. had not been able to imagine that there could be additional means of control, like being aware of changes in muscle tone when walking, or an increased body awareness after a lesson. He had considered it to be very uncommon that Michael should be able to differentiate between patterns of movement, or that he was aware of his legs' position in space in reference to a 'neutral' position before.

Throughout that period of time we were preoccupied with experiencing diagonal movements, together with finding stability and balance afterwards, again and again.

Then there was one lesson that increased his stability by leaps and bounds. He was lying supine on a thick roller underneath his spine, trying hard to find his balance. When I was almost ready to quit I gave it a last chance, and stayed at his knees, holding his pelvis, while he was finding out how to support himself with his arms right and left. Meanwhile his seventeen-months-old goddaughter – he had taken her on that day by coincidence – had discovered the toy-basket, and wanted to show each item to her uncle. And while Michael was exchanging toys with the child he had to move his head, arms, and hands. He was playing once only with his left hand, once with his right one, looking to the right and to the left hand, and incidentally was lying more and more stable on the roller, so that in the end I could let go of his knees and legs, and he was still hardly to be thrown off. When we removed the roller and he was lying at the floor again he experienced himself 'as if sunk deeply in my middle line, just the way I felt when I was lying on two logs on a sunny day in the forest.'"

In 1993 there was only time for FI-lessons, as Michael started building his own house, helping with the woodwork and plasterwork. By then walking felt more and more safe to him, so that he was able to walk around all that time with his left brace unlocked too. Before only his right brace had been unlocked. Upto then it had been unusual to have the left leg bent, now it struck him when, out of fatigue, he relapsed into the old pattern of walking with a stiff knee.

Although his self-perception had grown considerably he hurt himself badly when shovelling granules one day, and allowing his upper body a rotation too large for his lower body to compensate. Several muscle fibres were torn in his right thigh but he didn't feel the pain. Only the big haematoma that he discovered in the morning made him realise that he had hurt himself.

Another time he had been taking a rest on a hot radiator without feeling the heat. Only at home, noticing the wetness of his pants, did he realize that he had a huge burn-blister on his behind, which had already opened.

On December 17<sup>th</sup>, 1993, Michael's legs were staying calm for an entire lesson (we worked with his shoulders, clavicles, and head, Michael was on his stomach), which meant to me that there was a spontaneous inhibition, a new level of control; a fact which he was not aware of at first because he was habitually following the inner course of movement.

With time he had also got a clearer perception of his feet, so that I could start practicing with an "artificial floor", a short wooden board. After successfully standing on his toes for the first time, without this braces or crutches. In the course of that lesson we had discovered that his left leg would only organise itself for standing if the pressure from below approximately corresponded to the weight of his leg. The leg had a rhythm of its own between letting go and straightening, and it behaved in the same way when he was standing at the counter in a pub, having a beer, Michael had noticed.

Working again with the artificial floor in the following lesson, we discovered that the leg's readiness to stand was also dependent on the direction of his head, and on how his hands were placed under his head. There was a position in which a clear pressure from below would take the legs spontaneously to 'standing'. Afterwards, lying again on his back, Michael tried to control with his eyes at which moment his legs were to let go (conscious inhibition through visual verification).

In another artificial-floor-lesson on January 17<sup>th</sup>, 1997, Michael was again lying on his stomach, he had become aware of the spontaneous positioning of his legs to 'standing' by sensing that his knees were lifting off the floor, and turning. With his awareness he was then also able to decide himself at which moment he wanted to let go of his legs: the cortical level had regained control over the layers.

Documenting this case study gave me the opportunity to share with my colleague the discovery of how deep certain layers of an organism may lie, and yet we may touch them in our work. After a shock, an accident or a trauma, the personal learning process (i.e. ontogenetic) might begin right there, on the phylogenetic level, the genetically inherited archaic potential of movement.

With a honed perception we may reach the level of the limbic system, which is the next higher level of control over the deeper lying phylogenetic basis. The next step, the ability to inhibit spontaneous movements intentionally would be the link to the cortical layer, the most differentiated level of control in the nervous system. But these processes are overlapping, and this is why my report could neither be chronological nor systematically, the levels were interweaving.

In the meantime (i.e. 1997) Michael has moved into his new home, enjoying the larger rooms, and he has regained freedom to be able to manage on his own.

After a pause in 1995/96 we continued working together on a regular basis, and were amazed to learn how much there was still to be discovered and to be experienced.

When Michael went to the bathroom lately he left his scrunchies behind, and if it was the most natural thing in the world, was walking the 8m without braces and crutches.

The last time he came to see me he reported another surprising incident: He had gone by car to see his uncle the day before Christmas Eve. When he wanted to drive back home as sudden formation of black ice had covered his car with a layer of ice. He didn't have any tools, so he went back to his uncle's house to get hot water, going back and forth several times on the black ice, each time carrying a bucket full of hot water. When the windows were clean, after a while he got into his car and suddenly realized that he had been walking without braces on thick black ice all the time, and feeling so safe that he hadn't even thought of wearing his braces or taking a crutch.

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