

Anaïs and Her Scoliosis - A case-study by Ilana Nevill

I

On May the 30th 2011 fifteen year-old Anaïs had her spine straightened by a specialist in Toulouse, famous for such complex operations. He had kept the ‘evolution’ of Anaïs’s scoliosis under surveillance for almost six years, starting with prescription of a corset. For three quarters of a year the then twelve year-old tried in vain to get used to wearing this hard plastic corset regularly. It was finally decided that the young girl should be “left in peace” until she could be operated on at the age of 15 or 16. The professor advised her parents against the alternative of waiting until Anaïs was an adult on the grounds that most probably further deformations of her joints would occur and no longer be reversible. In addition any operation at that stage would involve the entire spine rather than just the twelve thoracic vertebrae. In search of a possibility of sparing Anaïs such extensive surgery, her mother consulted a highly regarded local physiotherapist (a German), who recommended the Feldenkrais Method¹ and gave Patricia my telephone number. During our first meeting (in April 2010) Patricia provided me with an overview of her daughter’s rather traumatic life. From the age of eight Anaïs had to cope with a metal appliance meant to widen her upper jaw.



Initially it was thought that this device had contributed toward deformation of Anaïs’s spine, sparked off by sudden growth. Unfortunately the expectation that the scoliosis would recede once what the mother called ‘brutal’ correction of the jaw had been concluded (ultimately only at the start of 2010) was not fulfilled. At the time when Anaïs was prescribed the plastic corset she was twelve. Almost at the same moment her mother vanished into

hospital for a cancer operation and had to stay there for several weeks. Two years later Patricia had to have a second operation so once again her frightened child with “too small a mouth” and an increasingly curved spine was left on her own.

The first Feldenkrais lesson: weight distribution on feet and sitbones - and the capacity for spontaneous reorganisation

Her mother was present for Anaïs’s first Feldenkrais lesson. Patricia accepted my invitation to make herself comfortable on a couch and from there follow the development of her daughter’s learning-process. Exhausted by having to take care of her own father (then close to death) and her

also ill mother-in-law, she quickly fell asleep. From then on Patricia's recuperative snooze became part of most of the Feldenkrais sessions that followed.

Anaïs and I first devoted time to discovering – by way of playful little movements – how she usually distributed her weight when standing on her feet and sitting on the ischia, and how that might be linked with her head's slight inclination to the right and the different configuration of the two sides of her thorax (with the left side somewhat protruding with clearly greater spaces between the ribs as compared with the right).

Apart from the externally scarcely perceptible curvature of her spine, concealed by an easy-going posture, Anaïs sat there as “comfortably” as many other teenagers : somewhat slumped with her pelvis tipped backwards, a rounded back, and a head stretched slightly forward. She became aware of the resultant strain – above all in the neck and abdomen – astonishingly quickly. Her initially shy and anxious facial expression vanished as she increasingly gained confidence in her ability to start slightly exaggerating what she began noticing about her posture and movement - patterns. While experimenting with subtle changes in her body's contact with unyielding surfaces (the floor and the seat and back of her chair) we were both surprised by initial spontaneous beginnings of self-correcting reorganisation.

Anaïs often felt pain when she was lying down so I suggested she should try out my air-table². (This alternative to the regular Feldenkrais table was developed in response to the needs of



clients unable to lie on a hard surface and further refined in the course of 15 years application. During that period I also explored how small round inflatable balls can be employed in FI³ and ATM). Anaïs immediately felt how the air-table's gentle responsiveness to the pressure of her weight - from the back of the head to

the heels - pleased her body. She felt like being “carried on clouds”. The pain she anticipated was absent, and that led to a growth of trust and interest in continuation of this initial lesson in somatic learning.

At first this involved a cautious attempt at preliminary clarification of a somewhat rigid self-image, developed over the years and manifested in Anaïs's body-patterns.

On the left the ‘pressure’ exerted by an air-ball pushing gently against the sole of her foot could easily be followed to the shoulders, neck, and head. However this side resisted the least ‘pull’ in the other direction. In any tentative ‘extension’ of the left leg downwards I initially proceeded only

indirectly. I avoided touching Anaïs's body with my hands. Instead I held an air-ball between the sole of her foot and my body, prepared to yield a little. A second ball, gently applied to the anklebone and the upper side of the foot, then invited – at first without response – a small movement towards the first balloon. On the right-hand side everything was exactly the reverse. The 'force-line' of compression starting from the sole got lost somewhere in the hip – which had in no way resisted the pull downwards. Then I checked those results by using my hands for the first time. With this direct contact I ascertained that both sides were already more similar in their response to gentle pushing and pulling.



Anaïs and her mother at home



All of a sudden there were tiny shudders in Anaïs's neck and head, while the head inclined even further to the right. I first put aside the question of how I should later bring the head back from this extreme position. More reassuring for the moment was the observation that Anaïs's spine was getting less and less rigid, the pelvis could be more easily rolled up and down, and her breathing soon became much slower and deeper. And then the question which had been put on one side resolved itself. Anaïs's head began of its own accord to seek a new position and suddenly lay more or less in prolongation of the central axis. There was further and similarly spontaneous self-correction when I briefly – and this time also playfully and indirectly – investigated the divergences of mobility between the two shoulders (right mobile, left blocked) and their relation with the neck, head, sternum, and ribs. Anaïs's head and neck became more free and mobile as the vertebrae between her shoulder-blades were activated. The most striking change took place in her thorax. The initial very noticeable bulge of the ribs on her left side had suddenly almost vanished.

Time for a rest and for feeling how unaccustomedly deep and even her breathing now was. Anaïs's hands lay on a ball resting on her solar plexus (She chose this position herself), very gently pressing it between the two palms when breathing out and letting go again when breathing in. It was almost as if she were holding in her own hands the gradually opening inner spaces in her thorax, pelvis, and stomach. Perhaps Anaïs became aware here (at least subliminally) that her own breathing was starting to remodel the perhaps distorted but in fact not so rigid bone-structure of her body – proceeding like a very cautious sculptor. The gently yielding air-bed subtly reflected the calm and regular rhythm of her breathing. It was not therefore surprising that Anaïs quickly fell asleep.



In the silence that followed her mother woke up again. When she saw her sleeping, peacefully smiling daughter, she asked me how she could best help Anaïs to relax in a way that was obviously possible in this moment. In response I gave Patricia a mini-FI⁴ so that she could feel in her own body how the gentle movements of a foot held between two not totally inflated balls very quickly led to relaxation of the leg involved, and ultimately the whole of that side – and that even one half of the face can profit from this. (It had also seemed meaningful to start with the feet because Patricia herself had already discovered that massaging Anaïs's feet always helped when her daughter sometimes had great difficulties with breathing).

Anaïs was woken by our voices. While she listened inwardly to making tiny movements when standing and sitting, all three of us were amazed by the almost miraculous change in her posture, the lightness of her movements, and the fullness of her breathing. Her smile said more than Anaïs could have expressed in words.

The second Feldenkrais lessons: Discovering the mobility of the spine

Anaïs's second Feldenkrais lesson was mainly devoted to investigating the mobility and central role of the spine. To begin with this time she sat on a fully blown up round ball about the same height as a normal chair. However this support was much less stable. Anaïs much enjoyed rolling, very cautiously, backwards and forwards, to right and left, and finally in the diagonals between her knee and the opposite sit-bone. Her task mainly involved listening inwardly to herself so as not to force or block anything – and above all also pay attention when she might have gone too far and her breathing suddenly faltered for fear of falling.

With some guidance the patterns revealed by these “reference movements” quickly became apparent to Anaïs : extension with straightening of the body while rolling backwards, and flexion with rounding of the back when moving forwards. Both the dysfunctional muscular effort linked with this pattern and the spine’s role in the relationship between pelvis and head were not initially clear to her. However when rolling to the side Anaïs clearly sensed that it was very much easier for her to go to the left than to the right.

Astonishingly this time Anaïs decided to lie on her stomach on the air-bed, in other words to adopt a position that was impossible for her in bed at home because of the immediate recurrence of back-pain. But now this position seemed to her both natural and pleasant. That gave me an opportunity to observe the degree to which Anaïs’s spine was deformed. The shoulders and the hips were slightly turned in opposing directions so that a deep diagonal “valley” was revealed between the “hills” of the left shoulder and the right hip.

As in the first FI I attempted to prepare the “terrain” for spontaneous reorganisation and self-correction by allowing myself to be guided in all these playful investigations by what the leftward-bulging, somewhat twisting thoracic vertebrae tolerated. That initially meant that the existing behaviour-patterns had to be unconditionally accepted through gentle support. We had to discover which movements – in what direction – Anaïs felt to be pleasant, and which were to be avoided at this stage. Once again I was surprised by the spontaneous reorganisation of her skeleton. The deep diagonal valley in Anaïs’s back became increasingly flatter and finally almost completely vanished. All of a sudden her shoulders and hips were almost parallel.

The way Anaïs moved at the end of this lesson was the absolute opposite of the same reference movements at the start of the session. Now she straightened herself when rolling forwards without any muscular exertion (extension), and when rolling backwards she slightly rounded her back and somewhat pulled together the front of her body (flexion). Anaïs only became aware of that change when I drew her attention to the initial patterns. It wasn’t at all easy for this young girl to find her way back to how she had first moved. Nevertheless she very clearly felt for herself that she had “grown taller” – at home she later ascertained that this growth amounted to no less than 2 cm. Anaïs also observed that she now sat much more securely on the ball and breathed much more easily. Later I heard that that evening for the first time she fell asleep lying on her stomach.

Anaïs begins to take responsibility for her learning process

After the third lesson it became apparent that the overburdened mother couldn’t continue to bring her daughter to our little Pyreneen village (half an hour’s car–drive away) more than twice a month. From then onwards in fact I only saw Anaïs every three or four weeks.

Faced with that situation I decided on an experiment, limited to a year. One of my air-tables was installed in Anaïs's room and she also borrowed a few smaller balls which she had found particularly pleasant and helpful during our lessons. The question was : Could Anaïs summon up sufficient motivation and self-discipline to continue working during the often long intervals between our FI sessions, processing the experiences she'd had there and found particularly useful?



On the air table in her bedroom

After her summer holidays a second question was added : Would it be possible to extend Anaïs's slowly but surely developing repertoire of movement in a more directed way by giving her "homework" after each lesson ? At any rate it was worth giving such an experiment a try. So after each visit she took home a few sketches and brief written explanations to help her remember what we had together tried out, investigated, and discovered in a

Feldenkrais lesson. Our hope was that this might help Anaïs at home and perhaps inspire her to carry out her own research. The only thing that Anaïs did in fact manage almost every day was to rest on the air-table after a tiring day at school and get rid of her back-pain through minimal movements.

At the end of August Anaïs came to her eighth Feldenkrais lesson after a long summer break. On that occasion I asked her whether she had noticed any changes in herself since our first meeting at the beginning of April. She said that after sessions she always felt much lighter, in the meantime her back was not so often painful – and not at all during the school holidays. She hardly had any breathing blockages any longer and she had also grown in height.

In a conversation soon afterwards Anaïs's mother added to her daughter's brief response :

Anaïs now suffers less from stress and has become much calmer and more balanced. Earlier she was afflicted by a sense of suffocation almost every week and became absolutely blue in the face. That usually happened at school; then I had to fetch her immediately and somehow try to calm her at home ...

Since she's been coming to you she's only had just one of those attacks – at a time when she hadn't had a Feldenkrais session for four weeks ... She doesn't need to take medicines like Ventoline any longer either ... During her holidays Anaïs even took the initiative with swimming

and some sport ... In general I think she's suddenly become really awake. After having retreated into herself for so long, she suddenly really blossoms ... That's certainly linked with what she learned from you ...

All these positive changes I can see in my daughter are a huge relief and joy for me. For years I was so worried about her and at the same time always felt that I was unwillingly burdening Anaïs with that. Now for the first time I can breathe freely again. Every time we drive home after a session with you she says to me : "Mummy, now things are going really well. I feel really well in my body".

Note

1 **The Feldenkrais Method** - The Feldenkrais Method employs two approaches: Awareness Through Movement or ATM offers playful movement exploration within a group guided by a qualified Feldenkrais teacher. For Functional Integration or FI see note 3.

2 This construction consists basically of four large oval balls held together in a cloth loop. For more information contact Ilana - ilana@feldenkraisnow.org



3 **Functional Integration** or **FI** is a one-to-one process in an individual session tailored to personal needs. The verbal cues of ATM are to a large extent replaced by the gentle, non-invasive touch of the Feldenkrais practitioner.

4 **Mini-FI**: a brief Functional Integration lesson.

II

Waiting for the decision: operate or not operate?

I worked with Anaïs five more times before her appointment with the Toulouse scoliosis specialist (at the beginning of December 2010) when a final decision was to be taken about her fate. The professor was surprised that the worsening of Anaïs's scoliosis he had predicted had not occurred and that his young patient had even grown a little. As was to be anticipated the expert stuck to his opinion that only an operation could save Anaïs from a life of pain. If the operation were delayed until adulthood then it would be much more complex and the “re-education” that followed would perhaps be less successful than at her present age. Of course – said the professor – the final decision lay with Anaïs's parents. The possibility of an alternative to an operation was not considered.

After talking to an older girl who had already had a successful operation, Anaïs decided in

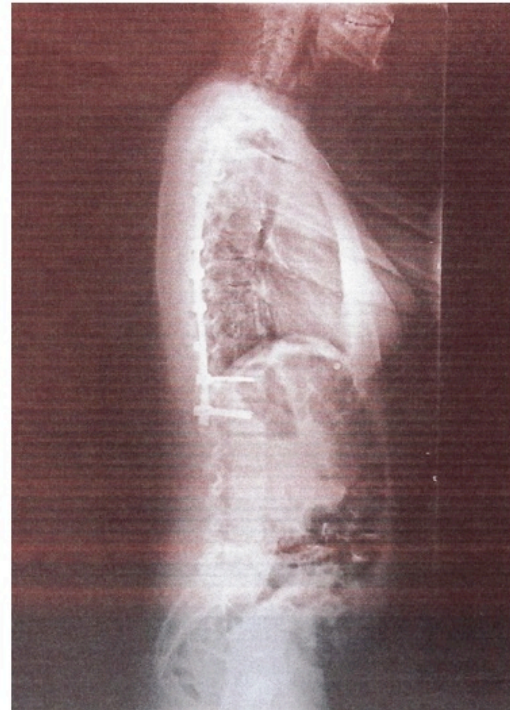


Before and after the operation

favour of “now rather than later”. The Feldenkrais lessons before the intervention were mainly devoted to finding ways of how Anaïs could cope with the inevitable doubts and fears : for instance by devoting attention to the way she was breathing, or by trying out very subtle movements in her imagination, starting with co-ordination of and differentiation between tiny movements of the eyes, tongue, lips, fingers, and toes. Even by just imagining delicate and scarcely perceptible movements as in eating a banana Anaïs very quickly noticed how previously unnoticed muscular tensions began

to dissolve, especially in the neck. She also liked feeling herself to be a marionette, cautiously moved by a puppet-master.

Anaïs's operation was at the end of May 2011. As mother and daughter had been told by the anaesthetist in a previous meeting, this was complex and lasted several hours. The back muscles



were detached from the transverse processes of the dorsal vertebrae and then fixed again in their former position after a thin supporting rod, made of a special steel, had been anchored on each side. The four x-ray images (two before and two after the operation) demonstrate how much her skeleton has changed – changes with which she now had to learn to live.

First Feldenkrais Lessons after the Operation

Anaïs's first post-operation Feldenkrais lesson, which was also filmed, took place six weeks after 'correction' of her spine. With her permission eight of my Feldenkrais colleagues, participating in the second Laboratory Meeting then under way, were present. As with the first such gathering (at Easter 2010) this was devoted to use of inflatable balls in our practice. Here too their effectiveness was immediately apparent. However making use of an air-table seemed premature. The session was mainly concerned with the question : "To what extent can the Feldenkrais Method help a person recovering from such intrusive surgical intervention to develop a self-image taking into account their changed skeletal structure ?" Anaïs first made a few 'reference movements' while we observed her spine. She straddled a chair, facing the back, and tried out how, without making any great effort, she could shift her weight to the left buttock and then later towards the right. Towards

the left went well but towards the right hardly at all. Then Anaïs lay on a mat on the floor, initially on the right side by choice. This lesson was devoted to the relationship between pelvis and chest. Occasionally some small dysfunctional movement made Anaïs laugh and the muscular tension responsible for this would usually relax fairly quickly.



None of those present had expected such astonishing mobility from a person who had so recently undergone an operation. When at the end Anaïs once again straddled the chair, displacing her weight from right to left, sometimes slowly and then somewhat more quickly, we could only marvel. Anaïs's spine and both sides of her body were capable of organising themselves so well that movements of the pelvis to left and right seemed almost equally straightforward and elegant. Anaïs received

spontaneous applause and looked radiantly happy.

After that I didn't see Anaïs for quite a while. Two or three times a week she went to a physiotherapist close to her home for the prescribed sessions of massage and muscle-training. When she finally came for her second post-operation session, Anaïs told me how tiring and boring she sometimes found her physiotherapy sessions, and added: After the lessons here I always feel much lighter and something really seems to change.

Before we started working I asked Anaïs whether she'd like to lie on the air-bed once again. She was immediately ready for that and this time lay on her left side. My previous fears that the supporting rods, which I imagined to be relatively rigid, would be incompatible with such a means of support, responding gently to the least movement, had long vanished. Anaïs also seemed happy to re-experience on the much more comfortable air couch the kind of movement sequences she'd previously tried out on a mat.

Once again almost four weeks passed before the next session, weeks when – as so often in this fascinating work – I had to confront the question of how, as a teacher of organic and somatic learning, one copes with increasingly acute feelings of frustration. During the period leading up to the moment when Patricia and her daughter were summoned to Toulouse for a follow-up examination Anaïs had had twenty three sessions of physiotherapy but only three Feldenkrais lessons.

No Way Another Operation!

The balance changed somewhat after the great disappointment that awaited mother and daughter at the hospital. The surgeon had told them that new x-ray photos indicated a second operation might

be necessary. The reason he gave was that the lumbar vertebrae had become more noticeably displaced towards the right, but such deviation could be corrected by extending the supportive rods. That was precisely what an operation in early adolescence was supposed to prevent. As previously, the professor seemed uninterested in any alternative, such as the ‘spontaneous self-correction through organic/somatic learning’ mentioned once again by the rather upset mother.

When I once again saw Anaïs in my practice she was in surprisingly high spirits and also seemed considerably more grown-up. She was absolutely sure of herself when she declared that she would not submit to another operation. From now on she would do Feldenkrais with me every week and then continue experimenting at home with the patterns of movement and organisation she discovered.



For three consecutive Sundays (the only day of the week she was free) we devoted ourselves to the absolutely concrete question of how Anaïs could learn to carefully reorganize herself so as to counteract an increasingly apparent inclination towards walking with a limp. Above all by more conscious awareness of a noticeable tendency towards contraction on the right side of the body since when walking (and also in pelvic movements around all three axes in FI and ATM: horizontal, frontal, and vertical) her right hip now automatically moved upwards, the ribs compressing, while the left side remained virtually immobile.

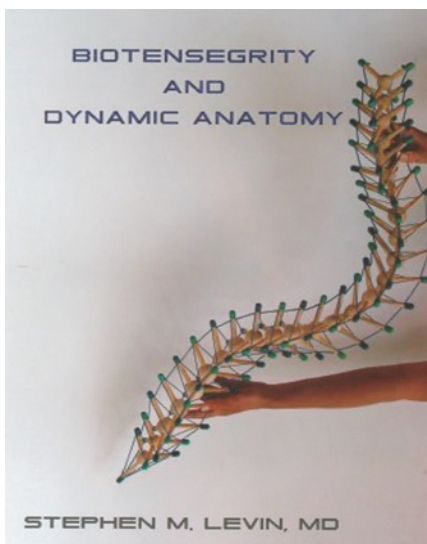
Ultimately I was able to see from the letter the Toulouse professor had sent to Anaïs’s family doctor that the operation had succeeded in reducing the scoliosis considerably. This communication also stated that below the arthrodesis (“Induced stiffening caused by operative removal of a joint”) a slight displacement (“disequilibrium”) of the spine (about 1 cm towards the front) had been

ascertained. As I read further I asked myself whether the professor might after all have taken into account what Anaïs and her mother had attempted to say during the recent check-up : “No Way a Second Operation”. After all the scoliosis specialist’s letter ended with the recommendation : “For the immediate future an attempt should be made by way of physiotherapy at achieving renewed equilibrium throughout the torso”. Another x-ray check-up was fixed for the end of the year. Anaïs’s family doctor duely prescribed continuation of regular physiotherapy treatment.

Educational Hopes

Anaïs’s overworked physiotherapist never managed to get in touch with me in order to discuss how to co-ordinate our rehabilitation efforts as originally intended. So I decided that now I would direct all my educational hopes towards mother and daughter. Maybe it was worth first trying to bring about a ‘rethinking’ in Anaïs and Patricia. After all Patricia was increasingly interested in why her daughter so appreciated what she learnt in Functional Integration and seemed to benefit more from that approach than from the prescribed physiotherapy.

The following Feldenkrais sessions were mainly concerned with the plasticity of the human brain and nervous system – and thus with what Feldenkrais practitioners comprehend as Learning To Learn. In that connection mother and daughter together watched the French version of a dvd brought out in 2007 together with Norman Doidge’s popular book “The Brain that Changes Itself”. The amazing miracles of “self-learning” presented there provided Anaïs with the best-possible encouragement towards discovering similar possibilities for herself and learning to trust equally ‘great’ abilities in herself.



To understand what is involved in “dynamic anatomy” we watched a mesmerising short film entitled “The Spine is No Column” (in the highly informative dvd Biotensegrity and Dynamic Anatomy by Stephen M. Levin, MD). A young man’s presentation of Breakdance – where his back, stomach, and ribcage (front, back, and side) touch the ground more often than his feet left Anaïs speechless in contemplation of the possibility of learning such acrobatic dance movements.

I wondered whether – or rather hoped that - Anaïs would begin to see herself as a kind of ‘autopoietic¹ sculptor’ or researcher, learning empirically, through lived experience, to what extent

her still not fully developed body could be shaped in accordance with her authentic proprioceptive and aesthetic feelings. The practical Feldenkrais ‘teaching’ that followed gave us an opportunity to make a start on playful experiments in self-modelling. As it turned out there was a specific issue.

Anaïs wanted to surmount the consequences of a wrong movement when washing her hair, in other words to be able to lift her right arm once again without pain between the shoulder-blades. After carrying out playful research into slow, small, and very soft proximal² movements, her arm and the right shoulder-blade could once again move freely. The pain had vanished and did not return. Two not totally blown-up “learning balls” greatly facilitated this FI.

The Feldenkrais lessons that followed built on those positive experiences – except that we approached the issue by way of distal⁴ movements. Instead of giving Anaïs a chance of using proximal movements to regain complete freedom of movement for a limb, in this case the right arm and the associated joint, we set about deploying arm movements (as in the “Prayer” and “Chandelier” ATM). Little by little Anaïs began to clarify relationships between shoulder and pelvis, chest and pelvis, backbone and breastbone, ribs on the right and left, etc, and also to appreciate how much more balanced and harmonious they were becoming in the process.

It soon no longer seemed wishful thinking to believe that Anaïs really was on a path towards gently modelling her own body - thanks to a self-image that was slowly becoming clearer and more subtle, so that she could gradually feel more at ease and at home in herself, despite the remaining curvature of her spine, and despite the steel rods keeping the backbone erect.

In the weeks just before the crucial second check-up at the end of December we didn’t have any opportunity of meeting again. However I was fairly sure by then that Anaïs had acquired outstanding capacity for applying what she had learned in Feldenkrais lessons (about conscious use of herself) in both everyday life and ongoing physiotherapy sessions.

On December 28th I received the splendid news that the professor was overjoyed when he saw the x-rays made that day. Anaïs and her mother were enormously relieved to learn that the local “displacement” ascertained during the first check-up had disappeared almost completely. A second operation was no longer necessary. Re-education through physiotherapy and muscle training could be stopped immediately and Anaïs was even allowed to go climbing. Patricia and Anaïs have reached an agreement with me that the balls which were so helpful in the young girl’s self-directed Feldenkrais practice at home should stay where they are for the moment, and that Anaïs should if possible continue coming to me once a month for sessions combining FI and ATM.

Notes

1 **autopoietic** : This term refers to the fact that we human beings, as all living organisms, are self-regulating, self-governing, and – within the surrounding world - to some extent self-creating beings.

2 **proximal - distal**: These words refer to relationships of closeness and distance between different parts of the body. The limbs are distal in relation to the trunk. The spine is the central axis of the body and as such *proximal* in relation to all its other parts, for example the shoulder joints, the arms etc, the hand is *distal* in relation to the wrist, the elbow more *proximal* than the wrist and so on.



III

In a little thank-you letter, written at the beginning of January 2012, Anaïs's mother Patricia said she was convinced that the Feldenkrais Method had helped prevent a second operation. For me there was little doubt. Like many other positive changes in Anaïs's life, this happy outcome was most probably due to her learning something very important thanks to a total of 31 Feldenkrais lessons spread over nearly 20 months (19 before and 12 after her operation): How to become more consciously aware of herself and of the choices she has with regard to posture and movement despite the curvature of her spine diagnosed as 'progressive' when she was only 12 and surgically 'corrected' at the age of 15. The shy girl I first met at Easter 2010 had become an exuberant, surprisingly self-assured teenager who plans to become a children's nurse. As far as I can tell, she now knows how to call on Feldenkrais for coping with occasional pains caused by tension. A set of air-balls continues to be useful learning tools whose mobility and pleasant supportively yielding quality will remind Anaïs's body of possibilities of letting go and moving, which she might otherwise have forgotten. The use of the air-bed for an entire year before the operation made her familiar with such possibilities right from the start.



For a long time Anaïs's mother had difficulty in remembering and pronouncing the name of the Method which was to prove so helpful for her daughter. In response to questions from friends and the Toulouse physiotherapist responsible for Anaïs before and after the operation, she merely said that in her daughter's 'treatment' subtle movements and minimally inflated air-balls worked real wonders. At their first meeting the hospital therapist was surprised by Anaïs's excellent posture. She asked how it came about that the pronounced curvature of her backbone couldn't be seen externally – as was the case with almost all other young scoliosis patients. The most reliable information Patricia could finally give was contained in the initial pages of this case-study.



By now Patricia is convinced that Feldenkrais and similar methods furthering awareness, responsibility, and self-help could contribute towards a necessary rethinking in the public health service. She is thus ready to provide active support for our laboratory research group. Anaïs also agrees to having her story published as a case-study, illustrated on a dvd by film sequences taken from a number of individual lessons. Of course such a 'public relations' project calls for

considerable reflection on practical and theoretical aspects of the somatic learning mediated by the Feldenkrais Method. We also need to concentrate on the question of how and why organic learning can be initiated and effectively supported by focused use of air-balls. At present we are still in search of concepts and theoretical models which may help clarify this issue. Some possible ways forward are already apparent and will be briefly mentioned in what follows.

Long ago I came across Moshe Feldenkrais' demand in his book *The Elusive Obvious* that 'we learn to think about the things we know in alternative ways'¹ When, soon afterwards, I read about the concept of tensegrity in *Anatomy Trains*,² Thomas W. Myer's book on dynamic anatomy, I started to develop an intuitive and reflective grasp of what might be required of me as a practitioner. A remark by Moshe Feldenkrais confirmed that I was on the right track: 'If you look inside bones, you will see they are so structured that Buckminster Fuller wouldn't have made a better structure' (Amherst Transcript 2.7.1981, p. 6). Even though Moshe did not use the word 'tensegrity', the originator of the Method we practice *must* have been familiar with the thinking underlying this concept.

Tensegrity: a Signpost towards Alternative Thinking in Our Practice ?

1. Continuous Tension – Discontinuous Compression

The concept of tensegrity (linking 'tension' and 'integrity') became known through the famous architect and inventor of geodesic domes mentioned by Feldenkrais. Buckminster Fuller's exceptionally stress-resistant constructions, made from steel girders apparently floating free in metal-cable meshing, stand out for their paradoxically flexible stability. These tensegrity structures became the model for breathtakingly bold sculpture and modern buildings whose capacity to react elastically to external pressures was to prove particularly important in areas threatened by earthquakes.



Geodesic dome

Stephen Levin³, formerly an orthopaedic surgeon and now a specialist in biomechanics, coined the term 'Biotensegrity' for the harmonious interaction of 'continuous tension' and 'discontinuous compression' characteristic of all organic structures. His biomechanical model of the human body has in the meantime been adopted by some Feldenkrais practitioners because the classical model – with its mechanistic views of the column-like character of the spine, the hinge-function of the joints, and the leverage exerted in the interplay of muscles and bones – simply doesn't correspond with their experience and way of working.

As a pupil of Ida Rolf (originator of *Structural Integration* or *Rolfing*) and Moshe

Feldenkrais (inventor of *Functional Integration and Awareness Through Movement*), Thomas Myer's thinking and practice go beyond pure biomechanics. He focuses on the complexity of the multiple overlappings and complementary aspects in relationships between structure and function.

In recent correspondence with these two tensegrity experts, they both stress that work with air-balls is very promising and must certainly be pragmatically and empirically continued. Asked about the origins of scoliosis the response was that to date there is no clear-cut answer; an operation is only justifiable if a serious worsening of curvature of the spine can thereby be prevented.

Regarding the role of air-balls Levin and Myers have differing opinions. For Levin blown-up balloons 'are not true tensegrity', but for Tom Myers they represent the simplest model of tensegrity that exists. Myers replaces columns, weight-bearing walls, and other compression-structures, which in traditional anatomy and physiotherapy explain the function of the skeleton, by the image of a balloon : 'A balloon is a classic tensegrity structure. The skin is the tension-member, pulling in. The air is the compression-member, pushing out.'⁴

In a complex process of interaction tension and compression continually adjust to all external pressures affecting the system. 'Substitute a series of dowels for the air, and put rubber bands in place of the balloon "skin" and you have a classic tensegrity structure.'⁴ Buckminster Fuller already used such structures to demonstrate the principles of tensegrity; they are now employed by Levin and Myers for the same purpose.



From handy demonstration object to the human body is just a little step. When connective tissue, muscles, tendons, and ligaments combine to form a unified functional network, they provide the *continuous tension* which determines overall tonicity. The bones, themselves tensegrity structures subject to diverse, gravity-determined forces, represent the compression-element 'floating' in this network. Thanks to this network what would otherwise be just a heap of bones becomes an elegantly functional living structure whose form constantly changes in accordance with variations in posture and movement and with the work the body has to do.

In the meantime progressive doctors also refer to tensegrity principles. They include Thierry Janssen who advocates radical reorientation of the public health system. In his book 'La solution intérieure' (The Solution Within)⁵ this former surgeon mentions the Feldenkrais Method as one of the already existing approaches to dealing with avoidable neuro-muscular impairment – both as prevention and rehabilitation. Janssen devotes particular attention to the damage apparent in all our organs – from individual cells to the body as a whole – when the tensegrity process, which keeps them elastic and healthy, is restricted or blocked by physical or psychological trauma. The earlier that happens the more disastrous the consequences.

2. *Suspension and Shock-Absorption*

Even though the author does not use the term “tensegrity”, the importance of the processes touched upon by Dr. Janssen is in fact the subject of a book recently published by a French cranio-osteopath. This work can help us to understand a little more about the concept, so here is a very brief summary of “*Carnet du Toucher – Voyage à la découverte de notre corps*” (‘Notes on Touch – Journey of Discovery in Search of Our Body’) by Yves Laval ⁶.

With touch gradually becoming the main context of learning for Laval, he became what he calls a “*praticien-chercheur*” (a practitioner pursuing his personal research). He began to question some fundamental paradigms of his profession and to develop strategies going beyond the classic approach to supporting a person’s healing he had learned as a student.



Reading up the latest findings in many scientific fields, ranging from physiology to neuro-psycho-immunology, helped him understand much of what his hands kept discovering. For instance: hitherto unsuspected movements and rigidities even at great depths in his patients’ tissues; traces of traumatic events which could be read like a “geography of constraints” imprinted more or less deeply in the global context of their bodies; and particularly “forces of pressure against gravity in all the fibres of the body, but also an opposite force coming from above”. Laval’s hands witnessed a “dynamic play within the tissues happening continuously within a “gigantic maze of collagen fibres, more or less elastic depending on local region and function”. This maze consists of connective tissues, the fascia enveloping all the muscles, bones, organs, blood vessels, the brain and nervous system, as well as of those elements themselves. Morphologically, bones, muscles, nerves etc. – as well as the network of blood vessels keeping them supplied with nourishment and oxygen - are also fascia; they too ultimately depend on our general state for their elasticity and vitality. Psycho-emotional strain on the autonomic nervous system, for instance, will in turn lead to a tightening of the tissues on all levels. The most damaging constrictions are those of the arteries and capillaries because they cause a reduction of oxygen supply (“une perte de pneumatisation”) in the affected areas which tends to spread all around.

Yves Laval presents a number of case studies to illustrate possibilities of helping a person to “re-pneumatise” the body, even on microscopic levels. A non-invasive, always attentive touch may, for instance, reveal that our rib cage is able to register traumatic shocks coming from many different directions. Thanks to the complexity of its connective tissue and fascia, I can become a “real reservoir of constraints”. The same touch will also reveal how non-verbal dialogue with the affected parts can set in motion processes of self-healing. Whenever and as soon as such “re-pneumatisation”

begins to remove the traces of traumatic memories, Laval has “the sensation that a ball of nervous and physical tension is being pierced very gently ... allowing the accumulated tension to escape”, while a renewal of dynamic elasticity gradually spreads throughout the liberated organism. Little by little such experiences lead to a greater understanding of the crucial role played by gravity as reflected in a predominantly vertical organization of most bodily fibres. All this impels Laval to develop a new approach which he calls “Fasciapraxie”, based on his model of the human body subject to principles of suspension and shock-absorption (see *Appendix*).

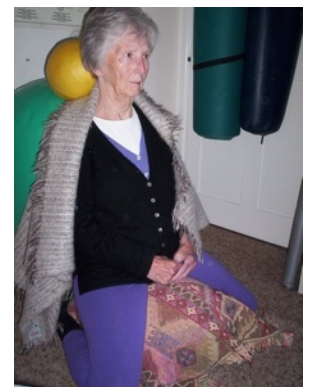
Laval's emphasis on the overriding power of gravity, and his prediction that osteopathy will discover that the command dictating rhythmic movements in tissue will be found in neurology, brings him close to the thinking underpinning the kind of somatic education at the heart of the Feldenkrais Method. His notes on touch thus indicate some promising answers to the question: why does the use of inflatable balls prove so effective in our practice?

During a recent visit a former English student/client demonstrated how she helps herself deal with more or less chronic pain without resorting to painkillers. There couldn't have been a better demonstration of what Yves Laval's book has taught me about possibilities of re-pneumatising ourselves.

Gladys, a tiny lady aged 86, mother of six children, cheerful survivor of several accidents, two heart operations, and spinal surgery, showed me with pleasure and great enthusiasm how she straddles an oval ball covered with a soft blanket. Then she began to softly bounce up and down proclaiming: “ This is what I do whenever the pain in my groin or elsewhere gets unbearable. It always helps!”

Gladys belongs to the people who helped – or rather forced – me to come up with an alternative to a traditional Feldenkrais table. When she first came to see me nearly twenty years ago, she simply found that table far too hard and uncomfortable, even when cushioned in various ways. The ensuing experiments leading to the development of an “air bed” were encouraged by a handful of Feldenkrais colleagues and trainers Ruthy Alon and Jeff Heller.

The latter wrote in an e-mail: ‘Moshe used to say that the best medium for giving Functional Integration would create the feeling of uniform contact and support for the whole self. You come close to it with the airbeds’.



Gladys at 74

‘Support’ and ‘Destabilisation’ in Systems Dynamics

In our correspondence Tom Myers observed that the air-bed creates an excellent learning-environment for Feldenkrais ‘because it requires an unusual response from the cerebellum and basal ganglia to produce new responses’ in trying to adapt to the horizontal relation with gravity and the

somewhat uncertain, dynamic equilibrium in this position. For him the floating feeling of being carried (as mediated by air-balls and the air-bed) accords very well with the tensegrity of the human body.

The astonishingly quick and often intensified learning that results from working with air can also be explained in terms of dynamic systems. In his discussion of convergence between *Dynamic System* principles and Feldenkrais Mark Reese⁶ emphasises Feldenkrais's strategies to 'destabilize attractors [i.e. deeply engrained and often dysfunctional patterns of behaviour] and help new ones to emerge'. One of the most essential strategies entails *greater support*. 'Many actions are easier to learn, and previously acquired abilities easier to elicit, when greater support is provided'. (In Feldenkrais that means primarily exploring movement lying on one's back, stomach, or side on a special table/floor.) That leads to 'lessened anti-gravity muscular effort, the reduction or elimination of balancing requirements, increased proprioception due to a greater surface area when contacting the floor, and heightened kinesthetic sensitivity'.

It is obvious that responsive support in the form of a strategically placed air-ball, and to an even greater extent an air-bed, offers qualitative improvement of contact thanks to a surface adapting smoothly to the contours of the body. Assured deployment of the possibilities of thus supporting the learner can then be linked with strategies for highly subtle *induction of instability*, as described in detail by Mark Reese. And beyond that movements not possible with an inflexible means of support can also be initiated, for instance careful and gradual backward movement of a shoulder, hip, or even the head when a person is lying on their back.



In working with air-balls (which permit movements around 360°) and the air-bed circumstances in the learning environment directly invite both the student and the 'teacher' to venture into unfamiliar experiences: of playfully engaging with cautious doses of instability and thus also into new dimensions of exploring what is really involved, and what we actually mean by *Learning To Learn*. For us Feldenkrais practitioners playing around with combinations of support and destabilisation may prove both enjoyable and paradoxically effective, and in the best of cases, can lead to considerable expansion of our reflective self-comprehension.



If *that* is absent biomechanics can become harmful as a working model – as was stressed by Josiah Hincks, an experienced FOCUSING practitioner and personal assistant to its originator Eugene Gendlin.

A separate article will have to be devoted to the reciprocally illuminating parallels between principles of Gendlin's FOCUSING and the Feldenkrais Method as discussed in an exchange of e-mails with Josiah who thanks to Feldenkrais (among other things) has kept the symptoms of his multiple sclerosis 'under control' for years. For now here is just a brief statement of what Josiah believes to be essential in the two approaches that have effectively changed his life:

"I FIND OUT what is optimal. NOBODY can tell me exactly what it is. They cannot tell me because I CREATE it by doing it. It does not exist UNTIL I learn it. Any approach that neglects this neglects ME."



Colette, Annecy, 2011



Practice of *Awareness Through Movement* and *Functional Integration* which measures up to such a challenge might transform the conditions and environment of learning in new ways by taking into account the principles of *Tensegrity*, *FOCUSING*, and *Dialogue* as understood by one of Moshe Feldenkrais' closest friends, the cyberneticist Heinz von Foerster⁷ who was known as the '*Socrates of Cybernetics*' (Feldenkrais was occasionally called '*the first somatic cyberneticist.*')

Such an opening of perspectives might well lead to completely new playful possibilities for both partners meeting in the Feldenkrais form of Dialogue which Moshe Feldenkrais used to describe as a 'dance' where the leading role is shared, continuously and imperceptibly passing from one to the other.

Ilana Nevill 2012

Notes

1. Moshe Feldenkrais, THE ELUSIVE OBVIOUS, 1981, p. 155
2. Thomas W. Myers, ANATOMY TRAINS – Myofascial Meridians for Manual and Movement Therapies, Churchill Livingstone, 2001 (revised 2009)
3. Stephen M. Levin, MD *Biotensegrity – a new way of understanding anatomy* :
www.biotensegrity.com/tensegrity
4. Thomas W. Myers : www.anatomytrains.com/explore/tensegrity/explained
5. Thierry Janssen, LA SOLUTION INTERIEURE (The Solution Within)
6. Yves Laval, CARNET DU TOUCHER – VOYAGE À LA DÉCOUVERTE DE NOTRE CORPS, Edition Dangles, 2012
7. Mark Reese, THE FELDENKRAIS METHOD AND DYNAMIC SYSTEMS PRINCIPLES (originally written for neuro-physiologist Esther Thelen, the author of A DYNAMIC SYSTEMS APPROACH TO THE DEVELOPMENT OF COGNITION AND ACTION)
www.feldenkraisglobal.com/html/dynamic_systems.html
8. See for instance <http://www.stanford.edu/group/SGR/4-2/text/foerster.html>

Appendix

One of the first diagrams documenting Laval's path towards his **Modèle de l'Homme Ressort Amortisseur** shows the “ great antagonistic currents in the body...some ASCENDING from the feet to the head, others DESCENDING from the skull to the extremities”.

These strategies of the tissue's response to gravity are designated:

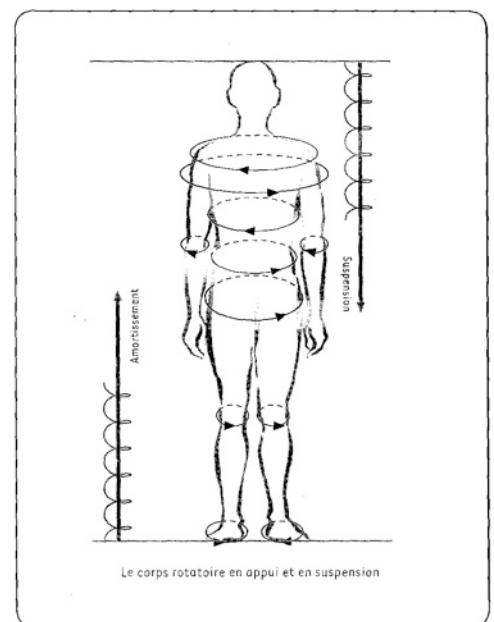
- 1. LE CORPS EN APPUI (The supported body)
- 2. LE CORPS SUSPENDU (The suspended body)
- 3. LE CORPS ROTATOIRE (The rotary body)

1.) The skeletal structure that keeps us upright and which we conventionally tend to see as static and fixed. Under the hands of an experienced practitioner this reveals itself to be a system capable of absorbing all kinds of impacts thanks to the viscosity and elasticity of the substance at bones' core, as well as thanks to muscles' capacity to act as dynamic shock absorbers, alongside their motor function.

2.) According to Laval this provides the true key for comprehending ourselves as the “anti-gravitational”

creatures we are. The sense of lightness we experience when we are well aligned in the gravitational field is due to shock-absorption - this time acting from above to below. The skeleton serves as the support from which a whole system of sheathes enveloping the most vital elements within the body is suspended; from the brain and spinal cord, attached to the interior of the skull and the vertebral column, to the insulation substance around the nerves fastened to the joint openings between the vertebrae and to all the supportive aponeuroses . (See also diagram of a runner below)

3.) The ability to move in the horizontal plane was developed very early during evolution and ultimately adopted by our ancestors the first hominids. Our movements to a large extent involve inverse rotations of our upper and lower limbs . In walking, for instance, the shoulder and pelvic girdle turn in opposite directions.



p. 91 Diagram from A. Berthoz's book *Le sens du mouvement* ('The Sense of Movement'),

Odile Jacob, 1997.

Here the neurological suspension is shown very clearly to be due to keeping the head stable: The feet of a person running only briefly touch the ground, so this can hardly serve as support or sole reference to remaining in the vertical. Instead the brain uses detection of gravity by the vestibular system in order to stabilize the head, creating a mobile platform as a kind of frame of reference. The eyes also play a crucial role.



p. 104 Diagram of the body illustrating its spring-like resilience and shock-absorbing capacity intricately linked under the impact of gravity .

