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When the Smallest Is Too Small: Overcoming Learning Difficulties in Math and Music with the Feldenkrais Method®

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As practitioners, we are often content to trust the Method rather than explore why the changes in our clients are so powerful, and why the Method may succeed where other approaches have failed. But how exactly does the Method facilitate learning in our clients? How does that learning assist them in making specific, significant changes to themselves?

We can't look at an atom with a regular microscope.[1] The atom is too small to disturb the waves of light significantly for us to register them. While there are ways to work around this problem, the dilemma of trying to see an atom creates a great analogy for us as learners.

When we teach little kids math or reading we run into a similar sort of problem. Jeanne Bamberger calls it the conflict between "units of perception" and "units of description." A *unit of description* is the smallest division we can make in order to describe something. It may represent a small thing like a "variable" (the x in algebra), a vocable like "ph," or a "quarter note" in music notation.[2]

These units of description are the building blocks of any notation system. They give us the opportunity to distinguish one element of

1 Tom Dennis, "On seeing atoms," UND Today (blog). University of North Dakota, Dec 3, 2019. https://blogs.und.edu/und-today/2019/12/on-seeing-and-moving-and-marveling-at-atoms/

2 Jeanne Bamberger and Andrea diSessa, "Music as embodied mathematics: A study of mutually informing affinity," International Journal of Computers for Mathematical Learning 8, no. 2, (May, 2003): 123-160, https://doi.org/10.1023 information from another and to state exactly what we mean, promoting clarity and precision. Notation systems made up of these units, the alphabet for example, greatly expand our power to understand and teach what we know.

In music, the expression “quarter-note” refers to a particular duration of sound. In anatomy, the abbreviation “T1” refers to the first thoracic vertebrae. These are both examples of units of description.

The difficulty with units of description for someone new to a subject they are learning, especially a child, is that units of description often have meaning only as a part of a whole. For example, the letters of the alphabet on their own are largely meaningless. Trying to explain the function and uses of these units of description is a little like expecting someone to recognize an image when presented with a sequence of jigsaw puzzle pieces.

Most of us must experience and communicate our knowledge instead through what Bamberger calls “units of perception.” *Units of perception* are the smallest divisions of information that we can take in while still maintaining our understanding. A unit of perception may contain many units of description.

As an analogy, a dot might be a unit of description, but you’ll need to see a lot of dots to recognize a picture made of dots. The smallest part of the picture you can recognize as something other than a collection of dots will form a unit of perception. Anything less and it’s just dots.

The expression “the back of my hand” refers to a part of the body which has no anatomical definition, but it is still useful. “The House of Representatives” may be as specific as most people need to get when they are discussing political representation. These are both examples of units of perception.

In this paper we’ll explore the difference between these two ways of communicating information. We’ll also make the relationship between the Method and other types of education clearer by exploring this topic in two subjects that challenge many learners, namely music and mathematics. We’ll begin with a typical dilemma that relates to our work as Feldenkrais practitioners.

Weber-Fechner and the learning dilemma

Imagine you are lying on the floor and you feel a lot of tension in your back. It’s hard for you even to be still and think about what’s going on. You squirm and reposition yourself, but you cannot get comfortable.

Someone comes over to you and puts their finger on your spine, just below the base of your skull. “That’s your problem,” they say. “If you can get that to move, you’ll feel much better.”

A single vertebra in the neck, held a few centimeters to the left by chronic muscular tension, will impact the carriage of the head, the mobility of the shoulders, and the balance of the weight over the knees and feet. Over a period of years, this may impact a person's vision, balance, and create damaging wear on the joints and ligaments. Clearly the answer is to move that vertebra a few centimeters to the right. Get it back in alignment. A tiny movement ... what could be simpler than that?

And yet the idea of being able to locate a single vertebra in our awareness, much less to isolate its movement, is monstrously difficult, if it is possible at all. Even if the vertebra were to be identified by touch and physically moved, its displacement is connected to a number of other elements of the person—physical, mental, and emotional—and its relocation would not make "sense" to them in a way that they could maintain it without continual conscious effort.

The Weber-Fechner Principle suggests that, in learning, a small stimulus will be more valuable to us than a large one, because the smaller one will have more of an impact on our sensation and intellect. Moving that tiny vertebra should be of more help to us than moving the entire neck. And yet we know as Feldenkrais practitioners that this is not always the case, because the vertebra, the unit of description, may be smaller than we can perceive.

Why is it that we as Feldenkrais practitioners have been trained *not* to address that frozen vertebra as the problem? Why is it insufficient, even ineffective, to isolate it? To get some clarity, let's examine subjects that are further removed from the idea of physical sensation, but which reflect on our inability to better ourselves.

What we need in order to learn about math

Children may be able to understand units of description in their own domain: one sock or a mark on a piece of paper may contain a world of meaning. However, in an area that is new to them like mathematics, we may be using units of description to talk about the subject, and those units may be too small for them to perceive.

In fact, due to the precise nature of mathematics, teachers may feel obligated to teach with units of description even while knowing that these concepts are difficult or impossible for the learners to understand without context. As an example, it makes sense to ensure that a student knows every step of the addition algorithm so that they can do it correctly.

1) Write the first two-digit number.
   54

2) Write the second two-digit number under it. MAKE SURE THEY LINE UP.

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  54
  96
```

3) Draw a line under the numbers. Add a plus sign just left of the lower number.

$$
\begin{array}{r} 54 \\ \underline{+\ 96} \end{array}
$$

4) In the second column, add the 4 and the 6 vertically. Because 4+6 = 10 and having two digits under the line will confuse matters, "carry the 1" by putting it above the first column.

$$
\begin{array}{r} 1 \\ 54 \\ \underline{+\ 96} \\ 0 \end{array}
$$

5) In the first column, add the 5 and the 9 and *also the 1 you just carried.*

$$
\begin{array}{r} 1 \\ 54 \\ \underline{+\ 96} \\ 150 \end{array}
$$

Each step in this relatively simple addition problem deals with a unit of description. Unfortunately, if you teach the process step by step like that, children of a certain age (and some adults) lose track because of the length of time and the number of steps. Left to their own devices, they will forget what they're doing before they're done with the operation.

A student that already knows how to add this way might break the operation down into fewer, larger steps like, "Draw the numbers; add them together; don't forget to carry the 1," or they may even conceive of the whole thing as a kind of number-dance, relying on spatial aspects of the operation. Fortunate students are able to group these units of description together to perfect their ability to work through the addition algorithm. People whose minds do not naturally gravitate towards mathematical concepts must rely on a good teacher to connect the dots of the procedure for them, and in the absence of this kind of help, they risk never being able to do it.

Since most of us reading this know how to add two numbers, we can't fully relate to the situation above anymore. So I'll use another example, from number theory, which will put most of us in a place of unfamiliarity.

If I add

`1 + 1/2 + 1/3 + 1/4 + 1/5` …

on and on forever, you probably wouldn't be surprised if I told you that the sum of all those numbers is infinity. You add forever, the number you get is "forever big." Right?

But what if I told you that when I add

$$1 + 1/2 + 1/4 + 1/8 + \dots$$

on and on to infinity, that the sum of all those numbers is "2?" You add forever, and the number you get is just a number, and not even that big a number. Would you believe me?

You might, but if you're smart, you'd want me to prove it. The result just seems too crazy to take on faith.

"Okay," I'd say. "So imagine that if *p* is a positive constant, then the *p-series*

$$\sum_{n=1}^{\infty} 1/np = 1 + 1/2p + 1/3p + 1/4p + \dots$$

diverges if $p < 1$ and converges if $p > 1$."[3]

3 George F. Simmons, *Calculus with Analytic Geometry* (United States of America: McGraw Hill, Inc., 1985) 395.

Unless you have a math degree, none of that means anything to you.

I'd love to explain it so you can see what I'm talking about, so I try to show you what the sigma symbol means, what the fractions with the exponents mean, what "diverges" and "converges" mean, but by the time I'm done, you've already forgotten the question. Because the elements of this explanation refer to and modify one another, they are very hard to understand on their own without prior experience. A mathematician understands each term and how it relates to the others, so for them the units of description *are* the units of perception. For you, the smallest idea you can grasp might be how to add fractions. This is your unit of perception, and you may not be able to understand the meaning of enough of the details to decode my sentence and understand why my crazy math fact is true.

Units of description in music

This is equally true in a subject that is supposed to be "fun," like music. Although the end result of music making is often quite joyous, the process of learning the skills required to make joyful music is often less-so. The culprit can be too small a unit of description.

For example, a crescendo is an easy-enough concept—"get louder gradually"—and yet asking children to do so is more difficult than it sounds. Rather than increase volume incrementally, they tend to go from quiet to loud immediately, because the gradations of increasing intensity are too small for them to distinguish. In my work as a piano teacher, I teach many things like this which are not really very difficult once mastered, but which are difficult to master.

For example, in order to play a melody pianists have to execute a kind of a dance with their hand, one with several "dance steps": Pinky plays A for two counts, thumb plays D for two counts, second finger and third finger play E and F# for one count, second finger plays E for one count, thumb plays D for two counts. It's tedious to describe an elegant melody this way. Once played, it sounds like a cohesive, sensible whole, but it takes all those words to render it for accurate replication by a beginner.

After students hear the phrase, it's often easy for them to sing it and sometimes to play it by ear. The phrase is an effective unit of perception in a larger piece of music. But when the melody is written in Western music notation consisting of quarter-notes, eighth-notes, and half-notes on lines and spaces, students have to reckon with each unit of description, deciphering it with their eyes.

Why should they bother? Can't they just learn it by ear, if that's easier? Some do.

But if they are to become experienced classical or jazz musicians, they will be in situations where they must learn a new piece of music by deciphering the notation on the page.[4] Therefore it is necessary that they learn and understand the use of these little black marks. My job, and the job of all teachers, really, becomes keeping the students engaged while they struggle with all of these units of description that are beneath their perception.

Some methods of music instruction insist upon "sound before sight," ensuring that music learners fully integrate musical ideas through movement and vocalization before they approach the written page. While this is a sensible, and depending on the instrument, sometimes necessary way of approaching the problem, it has pitfalls as well. Learners may become complacent with the skill of learning music "by ear" and choose not to pursue their knowledge into reading. In fact, many highly skilled musicians, Paul McCartney, for example, have never learned to read music.[5] As adept or even astounding as Paul McCartney is, certain musical problems like composing orchestral music without paying assistants to help write out the music, or being able to look through a book of Chopin Etudes and decide which ones to play without spending an hour listening to them, remain difficult or completely out of reach for him. The benefits of reading music, which are surprisingly vast, will remain inaccessible.

4 Professional pianists are often asked to play music set before them with no opportunity to listen to it first. Music notation, ungainly as it is, provides a powerful tool for learning and reproducing music. Good reading skills are of great benefit to the player.

5 Adam Wallis, "Paul McCartney admits he and the Beatles can't read or write music," Global News, October 1, 2018, 1:19 PM, https://globalnews.ca/news/4503916/paul-mccartney-cant-read-music/

Getting past units of description—stories and analogies

Many students do not gain facility with mathematical ideas. They may be able to do just enough to get by, and will rely on computers, friends, and professionals to do whatever else needs doing. It is common to hear stories of "math anxiety" that began in elementary school and climaxed in high school algebra or calculus with a decision never to do math again.

If students could see the entire picture of a mathematical concept all at once, in the same way that they can listen to a melody, getting a sense of the end-goal and how each piece of a proof or example contributed to it, the units of description would not be an issue. Unfortunately, only experienced mathematicians will experience a math problem like a melody, while the rest of us will see it as a laundry list of baffling tasks, any of which, done incorrectly, invalidate the entire thing. How can students be given the big picture *and* kept engaged during the description of the smallest units of understanding?

One method to circumvent the problem is to add elements to the problem which do not alter it, but which make it large enough to register on our consciousness, perhaps even at an emotional level. In my interview with original *Pete the Cat* author Eric Litwin, an expert on the development of literacy in children, he suggests adding story elements to a simple math problem. "So in your math class about subtraction, add a verse … [Pete has] a jacket with ten buttons. Five pop off! What does he sing? *My buttons, my buttons, my five groovy buttons!*"[6]

6 Adam Cole, "Eight Minutes with Eric Litwin," YouTube video, 8:06, 2022, https://www.youtube.com/watch?v=ZZbuke1mcT4

Turning an abstract problem into a story can have a magical effect on children's cognition. This, in effect, is expanding units of description into units of perception by adding elements to them that connect viscerally to the student, to their sensation, their sense of expectation, and to their need for resolution. However, unless the story can compel the students to want to solve a problem, they are more likely to remain caught up in the story itself, their imaginations taking them somewhere else, while they wait for the teacher to do the actual work.

Another means of circumventing units of description is by depicting the big picture via an analogy. In his article "Strawberry Feel Forever," Dor Abrahamson discusses the effectiveness of the use of analogy on music instruction, giving the example of a cello teacher who wants to explain how the student should touch the neck of the instrument with their left hand to make the best sound.[7] Rather than dictate the many individual movements and configurations for the fingers and the palm, the teacher simply suggests the player imagine they are holding a strawberry in that hand. The analogy instantly suggests the correct hand position and successfully ties all the elements of cello performance together so that the student is able to "grasp" a better way of performing with very little trouble.

7 Dor Abrahamson, "Strawberry feel forever: understanding metaphor as sensorimotor dynamics," *The Senses and Society* 15, no. 2, (2020): 216-238. https://doi.org/10.1080/17458927.2020.1764742

The drawback of the analogy is that while the student now knows a way to do it, they don't know why it worked. We have circumvented the units of description, but we've also lost the opportunity to understand and explore them. If we, the student, wanted to teach someone else what we'd learned, we'd be entirely dependent on the analogy to communicate our expertise.

The problem of movement and how Feldenkrais solved it

Let's go back to our vertebra.

Feldenkrais understood that the chief problem of self-improvement is the inability of a person to differentiate a maladaptive choice in the body in a way that it could be understood, owned as part of the self, and improved. Essentially, he recognized that many of our problems come down to units of description of ourselves that are well below our perception. How could we engage with our sensation at the appropriate level to learn and grow?

It might be possible to improve the situation with a story or analogy. Many visualizations like, "You're walking through a field of tall grass. Do you hear the ocean? Breathe it in and feel a release in your neck," can bring us to states where we feel better, but then, like the cello student, we don't know exactly what we did to get there. In the rush to "relief," we lose the opportunity to discover something about ourselves.

Feldenkrais' solution was to create a way to differentiate the elements of a function that fully engages the learner. Rather than ask someone to locate a vertebra, he creates a scenario in which the body is contorted in a way that constrains everything except the parts that are to be moved. The act of discovering what kind of movement is possible under these constraints becomes an intense exploration that fills a person's perceptions and engages them emotionally while still effectively isolating the areas in question.

For instance, in the Alexander Yanai Lesson #221, "Opposing movements of the head and shoulders [part 2]—while standing on the knees," Feldenkrais asks participants to put their right foot standing on the floor, placing the left hand next to it. Students are then asked to raise their right hand towards the ceiling and look at it. Finally, they are challenged to lengthen their left leg back and lift it off the ground.[8] This movement is difficult, and Feldenkrais says so. Nevertheless, he remains engaged with the class, giving them hints about how to make the movement easier, reminding them to go slowly and suggesting areas to focus on—like the extension of the head forward and the maintenance of the eyes on the uplifted arm. The student is fully engaged in what is essentially the isolation of the connection between the lower spine near the pelvis and the cervical vertebrae that carry the head.

Feldenkrais also provides multiple vantages of a single idea. In any given lesson he provides variations and transformations of the movement to be examined, putting students in different positions and scenarios—on their backs, on their sides—all of which nevertheless keep the focus on the same functional behavior.[9] Within the lesson just mentioned, students are asked to side-bend their neck in a completely different orientation from their usual lying-down posture, and to regularly

8 Moshe Feldenkrais, "Part A, ATM #222," in *Awareness Through Movement Lessons from Alexander Yanai—Volume Five*, trans. Anat Baniel, ed. Ellen Soloway (Paris, France: International Feldenkrais Federation in cooperation with The Feldenkrais Institute, Tel Aviv, Israel, December 1997), p. 1521. https://ebin.pub/alexander-yanai-lessons-volume-5-5.html

9 A *variation* would keep the learner's bodily position intact while varying an aspect of the movement: its speed, its direction, its coordination or opposition to another body part. A *transformation* would change the orientation of the learner while essentially keeping the function the same: lying on the floor and reaching up towards the ceiling, versus standing on the feet and reaching forward. Variations add interest to the task at hand. Transformations disguise it so that the habitual appears novel. Some variations can be transformations—in order to vary the act of turning the head to the left, you can ask the learner to keep the head still and turn the shoulders to the right, which is also a transformation of the movement.

check for improvement by examining the extent to which they can turn their head to look behind them.

On a larger scale, many lessons may share a single idea in common. The aforementioned AY lesson, #221, is one of a series that explores the connection between the cervical and thoracic vertebrae. For us as practitioners, being presented with a series of related AY lessons is similar to providing math students with a series of word problems all dealing with the same mathematical operation. Unlike the word problems, however, which are only of interest to people who like math, the ATM lessons compel us by stimulating our human survival instincts for balance and a sense of safety.

While the ATMs have Moshe's handwriting all over them, Functional Integration lessons may be much more idiosyncratic to the practitioner. Whether a client finds relief due to a well-thought-out lesson, or to just an effective touch and compassionate intuition, will depend on their interaction and connection with the practitioner. However, the art of FI comes directly out of Feldenkrais' exploration in the ATMs he created over the years. We are better able to serve our clients if we understand both the big picture of their organization and the details that are in play. With both, we can make clients aware of vital details that may be too small for them to see, but which are absolutely necessary for their improvement.

Potential for the Feldenkrais Method's impact on generalized learning

Just as in somatic self-improvement, math and music education make important use of units of description. Depending on the learner's expertise, this is either helpful or a complete hindrance to their learning. Can we borrow from Feldenkrais' Method to improve the chances of a learner in an academic setting?

In a presentation at Hebrew University, I outlined the possibility that math and music notation systems, insofar as we use them as tools, actually extend our body schema in the same way that hand-held tools do, so that we ourselves are physically connected to notation that appears only on paper or in our minds.[10] I went on to suggest that our ability to use a notation system would then be dependent on the quality of "movement" and "functionality" in the interface between that notation and our physical selves. If, in order to grasp a mathematical concept, we must imagine numbers and symbols on the page moving around to transform into other configurations, then it serves us well to examine anything that might improve our ability to make those numbers move in our minds.

10 Adam Cole, "Music and math notation: Improving performance by moving through imaginary spaces" (Presentation, Hebrew University, October 23, 2018).

If we really are connected physically to notation on a page, then we can enhance our ability to use a notation system by becoming more aware of those parts that connect to it. If we are "stuck" by a particular unit of description, a relationship between two types of variables in math, or a thorny rhythm as depicted in music notation, we may be able to engage with it, not only in an intellectual way, but physically, with our whole selves. In order for this to happen, we would need a new way of teaching inspired by the Method.

Determining units of perception in music notation

When I teach music-reading, I explain to my students that the music notation system they are using is actually movement notation—it tells them how to move at their instrument in order to make certain sounds. That being said, the Western music notation system does not reflect the actual movement it asks us to make. In fact, Western music notation uses images that are often at odds with both the movement and the sounds they represent. In this way, it can be an impediment to a musician's ability to play something that sounds and feels easier than it looks!

For instance, two measures which would take the same amount of time may have different widths, and therefore suggest incorrectly that one is actually shorter in duration than the other.

In the example above, the first four notes take exactly as long to play as the 32 notes that follow them. Some of my students have been known to play the first four notes far faster than they should as a result of the way the music appears, then crash and burn when they hit the next 32 notes because they cannot sustain the tempo.

Furthermore, these notes, which translate into an elegant phrase in the hand, resemble a frightening wreck of dots and lines on the page. Their appearance alone is enough to discourage someone from even wanting to play, much less decipher, the phrase. The only way to become adept at reading music notation is to learn to decode this non-representative notation, the symbols cueing us to make the movements which result in the music we want to play, much the way "ph" in the English language cues us to make the sound "f."

For this reason, I spend a considerable amount of time calling attention to the difference between our physical movements as pianists and what we see on the page, so that students are aware of it. I encourage my students to make marks with a pencil in the music in places where the notation is visually misleading. Their individualized marks represent the movement they need as they envision it, and their personalized symbol added to the notes converts a hard-to-decipher phrase into something big enough for them to comprehend.

I also ask them to count the beats of the meter out loud while they play. Coordinating the eyes while engaging the speaking voice does wonders for tying discrete notes to physical gestures. It turns the problem of reading dots into the more engaging problem of vocalizing at the precise moment the eyes hit a spot on the page.

The act of counting "1, 2, 3, 4" while playing a more complicated rhythm like what you'd tap out for the lyrics, "I've been working on the railroad ..." engages the students in other ways as well. There are deep neurological connections between the hands and the mouth that may be activated,[11] and of course when a student is counting, they are also breathing in time to the music. All of these elements combine to clarify the units of description that are the written-out notes of this folk song.

11 Frank R. Wilson, *The Hand: How Its Use Shapes the Brain, Language, and Human Culture*. (New York: Pantheon Books, 1998).

This is most important because students, especially young beginners, are interacting with a piece of music much more slowly than it is meant to be played. They must learn the music by playing at a speed they can manage. But if you sing "I've Been Working On the Railroad" at a quarter of its normal speed, the identity of the song, the melody and rhythm, do not sound like music. The very thing that should compel them to want to learn to play is missing, and counting can serve to keep them connected to what they are doing until they can increase their playing to a speed at which it is recognizable as music.

In both marking and counting scenarios, I teach the students to group the units of description (the individual notation symbols) into units of perception by explaining them as movements they are to do rather than as discrete concepts they are to understand. This is consistent with good sound-before-sight music education philosophies. However, because I can connect reading to movement, I am able to engage in a study of notation while we are learning rather than put it off and risk losing the opportunity, using units of perception (playable phrases) to give us more familiarity with units of description (notes on a page).

Rethinking math instruction

We might take a similar out-of-the-box approach to math to make it both more compelling and more comprehensible to beginning students. Imagine a teacher who discovers that their elementary math students are having difficulty understanding how to "carry the 1." Instead of writing it on the board and explaining it for the 10th time in a tired but hopeful voice, then asking the students to work out 50 examples on a worksheet, punishing them with a red "x" for each one done wrong ... a teacher might create a scenario in which the students are to visualize the number 10, where the 1 is gradually moving away from the 0 and sailing up to the upper left corner. The teacher might find a way to translate this idea into a physical challenge where the eyes are moving in a diagonal while the head and shoulders stay fixed, and then enhance the game by reversing the movement so that the eyes stay fixed and the head and shoulders move.

To make the movement of the 1 large enough to register on the students' perception, it must be attached to a compelling need. Having them stand on one foot while they move their eyes during the visualization would require them to balance, and the desire to avoid a fall would more completely involve them. Having them switch feet to see which one is easier to balance on would add further interest to the exploration.

If a math teacher wished to argue that this is a lot of fuss for a simple operation, I'd counter that this is exactly the point. That students may be incapable of understanding the tiny act of carrying the 1 unless it is tied to a much bigger unit that engages them as people. And the more potent the engagement can be to the act of "moving the numbers in their minds," the easier it will be to understand and enact.

Is it possible for us to use these concepts to make clear the infinite series problem I posed at the beginning of the paper? At the very least, it may be helpful for us to understand that we are hindered in our ability to understand why adding one set of fractions forever takes us to infinity, and the other set of fractions takes us to 2, by the very fact that sophisticated mathematical building blocks may be too small to understand in isolation. For us to gain the competence to be able to follow a straightforward explanation we would have to enlarge each of the small concepts into something that is meaningful to us through our curiosity or our instinct for self-preservation, so as to integrate them into our thought process and even our sense of self.

To reach such familiarity with the small concepts, we would have to be in an environment where we could play with them the way a child plays with blocks, perhaps on a website which allows us to change any element to see what the results would be upon the big picture. Potentially more compelling, a teacher could put us in a mutual learning situation that, through collaboration, assists us in feeling a human connection with the other students. If that situation made clear the idea of movement that we could see, or even enact, it would speak to us at the level of the nervous system and perhaps trigger an intuitive connection with these concepts, an experience that I suspect the best mathematicians come upon naturally.

Dr. Paul Lockhart in his famous essay, now the book *A Mathematician's Lament*, calls for the elimination of "standard" ways of teaching math, even changing well-worn vocabulary, in favor of creating a classroom environment in which students are given compelling, real, and interesting problems to solve, not on paper alone, but physically, and through conversation with one another.[12] In this way he is working to overcome or even avoid the students' collision with the units of description. Perhaps if his way of thinking were to be adopted, math teachers would no longer consider it sufficient to combine the bare essentials and hope that the students could add them together to get as far as they need to go.

12 Paul Lockhart, *A Mathematician's Lament*. (New York: Bellevue Literary Press, 2009).

Conclusion

My understanding of why my learning and teaching strategies have been effective has come directly out of my investigation into the Feldenkrais Method. It has allowed me an opportunity to observe myself and my students' increasing abilities through the lens of somatic engagement, and to overcome barriers to understanding brought about by a wall of impenetrable details. I am fortunate in that I have been able to improve the learning and performance of students who do not have access to regular Feldenkrais lessons.

Feldenkrais taught us that we can take elements that are too small to mean anything by themselves and enlarge them in our imagination and our curiosity. Through ATMs and FIs we differentiate the tiniest, sometimes pointless-seeming tasks out of a larger functional movement so that we, and our clients, can play with them. Once these elements are understood and reintegrated into the larger system, it changes our understanding and our capacity to act.

It's my hope that by better understanding what we are doing as practitioners, we can use Feldenkrais' insights in the development of his Method to improve our ability to teach the arts and sciences. Rather than abandoning units of description as being too difficult for the student, or subjecting our students to them and hoping they will somehow absorb them, we must find a way to make the units of description richer and more compelling to the learner. If we succeed, not only will we be better Feldenkrais practitioners, but we may be able to participate in the education of a new generation of mathematicians, musicians, and other learners that currently are lost to us.

Contributor Bios

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Zoi Dorit Eliou is a psychologist based in the San Francisco Bay Area. She began her career in mental health as a dance and art therapist and graduated with a degree in psychology in 1994. Her orientation is cognitive-behavioral psychotherapy (CBT) and dialectical behavior informed therapy (DBT). Zoi began her studies in the Feldenkrais Method in 2019 at the Institute for the Study of Somatic Education (ISSE) in San Francisco with Paul and Julie Rubin and graduated from the ATM pilot program in San Diego under the directorship of Arlyn Zones in 2022. During the Covid pandemic she taught ATM to a group of her therapy patients to address stress, social isolation, emotion regulation, and distress tolerance. For more details on her background and current practice please visit dreliou.com.

Katarina Halm, CFT, GCFP™, has an M.A. degree from the Institute of Transpersonal Psychology where she did her thesis on resonance and dissonance in the learning process. She is a Focusing teacher and Feldenkrais® practitioner with a deep interest in how language emerges in our movement, dreams, and daily living. Katarina integrates practical applications of Feldenkrais' "Learn to Learn" with Eugene Gendlin's Philosophy of the Implicit. She graduated from Jeff Haller's Victoria Feldenkrais training in 2007. Katarina's website is thinkinginmovement.ca. She is also active with Feldenkrais Legacy Forum (FLF) working groups and has co-developed the Feldenkrais® Inclusion Initiative with other practitioners and support from the FLF Committee.

For more information, please visit https://acole.net

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