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Dynamic Alignment

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"Do you want to move or do you want to stand still?"

In the early 1970s, Susan Klein was poised to begin a career as a performing modern dancer. However, a recurring knee injury was severe enough to preclude this move. She engaged in finding a path to recovery and healing. She discovered a different way of functioning that yielded different results. She discovered how to use the body in accord with nature. This yielded healthy function and the possibility of recovery rather continued injury.

Recently, while riding the subway in New York, I met Julio, an orthopedic surgeon from Mexico who had moved to the United States to further his career. I told him of my interest in employing what I have learned from study of Klein/Mahler Technique in the practice of physical therapy. I am completing prerequisites for a physical therapy program which I plan to attend in the coming years. Klein/Mahler Technique advocates dynamic alignment, prominently exemplified by putting the pelvis on top of the legs; dynamic alignment responds to the body's continual change of shape with ongoing adjustments that keep directing forces in the body to the support of the skeletal system. Julio commented that the old school was more grounded in these fundamental principles of support through the skeleton. As we talked further, he remarked that "the hip cries at the knee."

Not surprisingly then, the technique that has grown out of Susan Klein's quest to heal her knee injury deals a great deal with the tail, sacrum, and pelvis. The hip, as well as parts connected to it, exploit continually calibrated vertical stacking. A need to cry is removed. Then the knee does not have to bear the burden of compensatory movement which, in spite of easing the burden on the hip, would wear on the knee.

A student of Klein/Mahler Technique learns to direct forces in the body to the bones. Attention is given to negotiating the relationship between his or her center of gravity and base of support. Standing, weight is directed from the center of gravity down to the base of support through the bones. Articulation and integration of parts of the body allows for coordination of support in the direction parallel to gravity. As connections in the body are clarified, so is support from the ground to the center of mass and beyond, to the rest of the body. All parts of the body have mass and, unless directly receiving outside support such as the floor, all parts rely on support from the rest of the body. So there are many connections within the body. While the head-tail connection and the connection from the sitz bones to the heels get a lot of name recognition emphasis, the principle of connection, well embodied, functions systemically. Muscles coordinate to optimally exploit the strength of skeletal structure, be it by stacking or hanging efficiently to support every part of an integrated body. A connected body is efficient. It uses less muscular effort to produce a strength of push that would require greater effort if the connections and agreement with the direction of gravity, the guidance of forces to the bones, were less. As the body directs forces to the structure, it receives support from the structure. Rather than strain, burden, and injury that misdirected force may produce, well-directed force yields optimal strength. (To direct force other than optimally through

the skeletal support is to raise the possibility of injury.) Additionally, in this coordination to exploit the skeletal system, muscles are awake and responsive, providing force when needed, not otherwise. Thus, as muscles are not bound, held in holding a posture, there is greater possibility of movement, in terms of both range of motion and ease of motion.

Students of Klein/Mahler Technique develop efficiency in the body as they learn to function in agreement with and exploitation of simple principles of body mechanics. In class, students work with consistent directions to discover these principles and cultivate experiential embodiment of them. With attention and intention, these principles support more and more varied and complex movement outside of class: dance, athletic movement, or daily activity. In class, simple exercises are done with ample time. Through consistent practice, attention to the parts of their bodies being articulated and integrated, connected in relationship by dynamic alignment, students discover and become aware of more efficient, healthier functioning. Dynamic coordination and reliance on skeletal support grow hand in hand; static tension, which can be an obstacle to this new relationship, becomes increasingly unnecessary for support and can be shed. Discovery of support from the ground through the body's structure is a revelation.

Barbara Mahler started studying with Susan Klein in the 1970s. She teaches most days and has been teaching for about thirty years. I have been studying Klein/Mahler Technique for a year and a half. My research consists of hours of class time, independent practice, observation, and discussion, as well as synthesis of the practice with daily movement, dance, academic coursework, and indeed much of life. Barbara has a command of the material and a keen eye for what is working or not in an individual in a moment as well as tracking development over time. The individualized feedback she

gives students during class guides them to bodily realization of the principles of the technique. The teaching and learning is much more in the style of oral tradition than academic study. Sometimes Barbara declines to answer a question or give information that might confuse or distract a student. She will often have the student asking a question demonstrate the exercise from which the question arises. Doing the exercise, the student can immediately, physically incorporate the information she gives. After my first class with her, I asked a question. She requested that I show her the exercise, and then that I try it again with her guidance. She then told me, "Find your legs and then we can talk." I needed to direct the forces in my body more clearly through the skeletal structure of my legs to the ground. Once I did that, rather than taking me off track by putting my mind ahead of what was happening in my body, an answer to my question could be actually informative.

Thus, Barbara is insistent that students experience and incorporate the material physically. She gives information to guide and catalyze experiential discovery. Embodied understanding makes sense of intellectual understanding, of words heard perhaps many times before. Concepts in action are fruit. A fuller intellectual understanding then comes from embodied knowledge.

Students study Klein/Mahler Technique engaging with the material using their bodies. They learn the structure and function of their own bodies as they practice exercises and experientially discover meanings of words of instruction. Students of various levels of understanding and experience all study together, each taking his or her own class because each student works with his or her own body and knowledge. Function and understanding grow by positive feedback. Experience provides a roadmap.

But the map is not the territory. As the body continually moves, staying attentive and engaged contributes to health.

A Klein/Mahler Technique class invariably begins with the students standing with their feet under the ischial tuberosities (referred to as the sitz bones as they are the part of the pelvis we sit on). They bring the attention down to the level of the bone, breathing into the centerline (which goes centrally from the top of the head to the base of the pelvis), connecting the sitz bones to the heels, the tail moving down and forward, the head moving up. Students follow these directions to the best of their present and growing understanding. Directing attention and intent already yields physical change. To varying extents, the center of gravity moves to be more centered over the base of support. Within the body, parts move to more efficiently manage force relying on support above or below, providing support, integrating to the support of the body and ultimately the floor.

Alignment changes. Over time, the aim of the work is for each student to achieve greater efficiency and ease, coordinating the muscles necessary to direct forces through the bones and letting muscles not needed for the maintenance of posture be more free for movement. The mind and body experience, discover, and learn. The way a student manages forces in his or her body changes over time. Alignment is also dynamic moment to moment as there is continual movement of the body, even when standing still.

Standing in one place, breathing, there is movement. Barbara Mahler advocates that the ribs move and the curve in the spine changes. Indeed, as the diaphragm drops, the external intercostals contract, raising the ribs. This change in shape increases the volume in the thoracic cavity, and, thereby, in the lungs. In accordance with Boyle's Law, this increase of volume causes a drop in pressure inside the lungs. Since air outside

the lungs is then at a relatively higher pressure than the air inside, it goes in. Thus, movement of the body causes inhalation and exhalation. Restriction of this movement causes restriction in breath. As breath is continuous, movement in the body is continuous. The shape of the thorax changes, and so, its weight shifts. Klein/Mahler Technique embraces the movement of the breath which naturally incorporates into and promotes the dynamic alignment of the whole body. Coordinated connections in the body, maintained by movement, act to keep forces going to the bones, so that support comes ultimately from the base of support. With movement of the body, even a gentle breath, there is a sequence of movement through a connected body that keeps the force going efficiently to the ground.

Class continues with the hallmark exercise referred to as hanging over. Students find their tails with their hands and, breathing all the way, begin to roll slowly down to half way. Half way is the point right before the pelvis tips forward, which can be felt by the hands on the tailbone. Rolling to half way begins with the top of the head moving forward. The movement slowly sequences down the spine, the head and top parts hanging first. Progressively more hangs as the movement sequences through down the vertebrae, articulation providing for bodily learning, increasing possibilities of movement while letting go of habitual tension. Slow speed and much breathing both help to release muscular tension in all that is hanging: the neck, back, shoulder girdle, chest, and abdomen. Many of these areas have habitual tension. Slowly bringing them into an unfamiliar orientation in which there is no need for upright support in their neighborhood allows them an opportunity to let go as support comes from hanging on the body's deeper structure. As the torso is unusually oriented, a seed of learning is planted for later when

the torso is upward again. This area experiences release of habitual tension and it experiences support from the body's deeper structure. This can take a great deal of mental effort, concentration, time, and repetition.

While the upper body has moved slightly forward to hang, the pelvis remains upright. This allows the musculature of the upper body to release and the head to be supported largely by the skeletal structure using the head-tail connection. At the same time, the lower connection of the sitz bones to heels is challenged to support the pelvis which is pulled by the head and torso.

While at half way, students then place one hand on the pubic bone, one remaining on the tail, and breathe into the space between them. On inhalation, as the diaphragm drops, pressure increases in the abdominal and pelvic cavities. The movement of breath in the body aids for circulation. The increase of pressure below the diaphragm on inhalation, again in accord with Boyle's Law, aids in venous return of blood. In the context of Klein/Mahler Technique, the increase in pressure in the pelvic girdle pushes on the sacrum, and can open up movement in the sacroiliac joint. Movement of this joint is healthy for bodily functions like walking. Commonly, however, it may be trained out or limited by habit. Whatever the case, this is a chance to harness the body's mechanics to catalyze movement.

Next, the arms are let to hang. The shoulder girdle and chest can let go. The chest can actually cave down into concave between the arms. Taking tension off these muscles allows them to relax. Then, later, making a relaxed return to their usual upright orientation, they will be able to open more and settle onto the underlying structure that is

there to support them. Reliance on this support allows for stability without undue tension.

Hanging over progresses as the students roll all the way down. Movement is initiated from the top of the head. Movement sequences down the spine until, due to the head-tail connection, the pelvis moves when it is tugged by the movement of the head. The pelvis tips forward, the mass of the torso shifts forward, and the pelvis moves backward, keeping the center of mass over the base of support. As the roll down progresses, the center of mass shifts back and weight pushes down through the heels. Legs are initially extended, hamstrings providing support. Hollowing the hip sockets, that is, letting go of muscular tension in the hips, is emphasized. This promotes easy movement in the joint, allowing the body smoothly, naturally to coordinate the shift of mass, directing the weight efficiently to the base of support. Hollowing allows for greater range of motion, as tense muscles obstruct extreme flexion of the hip. Importantly, even when the degree of hip flexion is relatively small, hollowing translates to an easy leg swing in walking. In both walking and hanging over, forces are directed to the bones. The hamstrings are engaged in maintaining the connection from the sitz bones to the heels, allowing bones to provide optimal support.

While hanging over, rounded all the way down, there are a few common additions to the exercise. One, referred to as shaking the weight down, is pulsing with the knees bent. This promotes additional release of muscles not needed for support. As in walking, the legs push. The body has a chance to maintain the developing dynamic alignment of the center over the base of support, the corresponding connections, and new ways of using or not using muscles as appropriate. After pulsing, there is settling, relative

stillness with the knees bent. Movement of the breath continues, as does the effort in the legs: connecting the stiz bones to the heels, guiding the forces through the bones.

Sometimes pulses are taken from side to side, leading with the greater trochanter, the protrusion of the femur which can be felt at the outside of either hip. As in walking, weight is directed down the boney support of alternately one leg and the other. While one side provides support, the other lets go. This release comes into play in walking as legs swing forward and drop to offer support as steps are taken. Note the forward swing in walking is initiated by the coccyx, known as the tail.

The tail's initiation is explored in rolling down into a little ball, which comes next in a typical class sequence. Hanging over slightly bent knees, students breathe with attention to lengthening the spine and particular focus on the tail. Then the tail carves in the direction it points, which is down and forward relative to the pelvis's upright position, leading the way into a little ball. On its way down, the pelvis, which contains the body's major pivot point of the hip joint, moves in an arc, first back then forward, around the pivot point of the knees, which moves forward in this process. The center of mass moves forward and down. As it does, the base of support shifts from the middle of the feet to the balls of the feet and the heels likely come off the floor. Some time is spent in the little ball. Tension in the spine and shoulders is released using cyclic pressure of the breath and continual stretch due to gravity. Breathing into an area means using the pressure of the breath to aid stretch and release muscles, creating space in associated joints. In the little ball, the sacroiliac joint is breathed into.

The head leads forward and down to initiate the body's move back up from the little ball to hanging over, legs extended. The head-tail connection comes into play as the

pelvis does not move until the tug from the head makes it move. The hip joint is a pivot point. The body moves around it pulling the legs along. The head, connected to the tail, continues reaching down. Heels push to the floor and connection from the sitz bones to the heels pushes the pelvis as the head pulls it. Then the student is again standing, hanging all the way over, weight going to the floor through the heels.

Rolling up to standing usually begins with a bend of the knees. Then a breath and again the tail initiates, poking to carve in the direction it points. As the tail leads, the body follows, still hanging. This time instead of carving down to a little ball, the tail initiates and the body coordinates to roll up to standing. Back muscles and abdominal muscles are now challenged not to return to habitual tension as they revert to their usual orientation. The tail leads the body to sequence up to standing, stacking vertebra by vertebra, the spine on its own support. Led by the tail, the pelvis goes past upright, tipping slightly back. The legs push into the floor. The pelvis returns to upright. The sequence gets to the top of the head, and the student stands upright!

Before shaking out the legs and taking a walk around, there are circles of the scapulae, forward-up-back-down four times and the reverse of that four times, as well as circles of the head, the top leading forward, right, back, left, forward, then reverse, four times each way. These movements are done over a pelvis strong on top of the legs. They are the beginning of movements of the upper body that has increased ease and range of motion due to supple support from the grounded lower body. After the shoulder and head circles, students shake out their legs and take a walk around. Students' gaits are noticeably different after they roll down and back up a couple times, especially with the addition of figure eights and/or diagonal stretches, described below.

Often while hanging over, just after pulsing, figure eights are carved. The greater trochanters lead the pelvis in figure eights in the horizontal plane. The center of mass moves around the outside edge of one foot, over the support of the feet, and around the outside edge of the other foot. The body hanging over, supported by the hamstrings, hip sockets hollowing during the figure eights allows the body a chance to go through a full range of motion applicable to walking, with ease and release in the hip sockets.

Diagonal stretches may also be done hanging all the way over. This introduces the spiral that occurs in walking. The stretch begins by reaching one hand across the outside of the opposite ankle. The stretch progresses sequentially through the torso to the sacroiliac joint. A second part of the stretch consists of shifting the weight toward the supporting leg, which is the leg with a hand on the ankle. Together with this shift, the other leg bends. (The twist corresponds to the spiral in the body when a leg is in the forward swing of walking, a step is about to be taken, and when the step is taken. The hand opposite the stepping leg is also forward.) The student pushes down the bent leg to shift the mass back to center, finishing the stretch in the starting untwisted, hanging position. The bent leg corresponds to the leg that swung forward in taking a step. The transfer of weight corresponds to the transfer of weight and push down, which in walking would be another step, accompanied by a pull back by the leg to move the body forward.

There are many further exercises to create space and connection, mobilization and support of various body parts. However, these key concepts, as well as direction of forces through the body, are already well conveyed by the exercises in the early part of the class, outlined above. These principles, foundational in Klein/Mahler Technique, are

key to healthy performance of daily human activities such as standing, walking, and running.

The principles are fairly simple. However the body's movement can be too complex for conscious, detailed management. I believe this is why Barbara Mahler sometimes declines to answer a question.

When playing the piano, I have had the experience of becoming rather confused when I looked at my fingers to see what they were doing and started paying attention to their individual movements. Until then, the coordination was unconscious and smooth. They seemed to be functioning on their own, similar to typing, where thinking is dedicated to the construction of sentences and finger motion is managed unconsciously. Guiding every action individually is too much for conscious control. Along the same lines, one of the most helpful techniques I learned for playing a melody was to sing the notes I wanted to play. A connection between the sung pitch and the played pitch developed and the ease of singing translated into an ease of playing. Accordingly, Barbara Mahler is aware of how appropriately placed intention can translate into easy movement while overly specific control leads to halting performance. Thinking of initiation from bones, like the coccyx or greater trochanter calls up coordinated connection without bringing over complexity. Of course bones do not move bones. Muscles move bones. Initiating from bones, appropriate muscles provide the force necessary for movement or posture. Practice of Klein/Mahler Technique offers opportunity to unlearn habits. The musculoskeletal system becomes more efficient as excess tension gives way to dynamic response. A connected body uses its skeletal structure for support.

I am interested in using insights from Klein/Mahler Technique in the practice of physical therapy. In my future studies of physical therapy, I look forward to discovering where and how Klein/Mahler Technique, with its focus on a connected and integrated body, and awareness of the pelvic girdle in particular, can enrich physical therapy. Already, when volunteering at a physical therapy office in Brooklyn, I noticed that many of the patients carried their pelvis tipped forward. While their treatment addressed whatever part was giving them noticeable trouble, I suspect that they could be spared a lot of future trouble by therapy that works on dynamic alignment as a general principle, and specifically applies it to the central part of the body, the pelvis.

Klein/Mahler Technique has a focus on education. In teaching, Barbara Mahler is insistent that students discover form and learn by experience, integrating guidance with attentive action. This is in contrast with a lot of dance training in which a form is presented to be mimicked, disregarding individual differences with exactitude of placement in space as the ideal. Quite the contrary, Barbara has stopped class when everyone has looked too similar to one another, saying "I know you all are different," and going on to illustrate the tail bone, pelvis, and forces. Discussing what is happening in the body, she advocates that each student attentively and continually discover his or her own body and function in accord with the discovery. There is continual interest and attention to what is happening in the moment in the body. While there may be a map built from experience, the territory is surveyed continually.

Correspondingly, a physical therapist can catalyze engagement. Working from principles of function, I hope to help each patient find the nuances of his or her situation. I am interested in a shift from patient to student. As a person coming for therapy takes on

the role of a student, they invest their energies in their own wellness. Such engagement is essential in the learning and practice of Klein/Mahler Technique. Engaged people realize their own agency in the face of their problems. Deane Juhan, bodyworker and author of *Job's Body* writes of a study of three groups. One group had little stress. Another had stress but no way to affect their situation. The third group had stress and a way to deal with the situation. The healthiest of these three groups was the one that could engage. A similar study was presented in my developmental psychology class this semester: in either success or failure, students who believed their engagement could affect the outcome of their work were happier than either those who thought they would naturally just do poorly or those who thought they were naturally gifted and would do well!

Klein/Mahler Technique holds promise for broad application in public health. For example, I have encountered widespread ignorance about posture. For many years, though I was conscious of and interested in my posture, I was unaware of the key principles of dynamic alignment. Posture arises from the support of the skeletal system, muscles coordinating easy movement to direct forces to the skeletal support rather than being bound in holding a posture. I was frequently complimented on my posture. I held my head directly above my shoulders. I held my shoulders and abdomen with muscular effort. However, my pelvis tipped forward, unnoticed. At various times I had lower back pain, painfully tight thigh muscles, and foot pain. I was unaware of how my posture and the way I was using my body contributed to pain.

A dance teacher in college tried to help me better align my pelvis. It was, she said, like trying to arrange a bookshelf. If you move the CDs, the books topple; if you move the books, there go the CDs. I was reminded of this while I was looking thorough a

physical therapy book. A set of two photos showed a physical therapist working with a young man. In the first photo, his head was forward of his body, his neck craned. In the second, the therapist had guided him to align his head above his torso. However, there was compensatory change lower in his spine. In the second photo, his pelvis tipped forward and his lower back arched. He and I shared a problem. When one part was brought into better alignment, another part went out of alignment. As Klein/Mahler Technique allows for increased articulation, it allows for movement of different parts relative to one another. They can then connect in more efficient alignment, directing forces to the bones rather than, in my case, overburdening muscles of the lower back, thighs, and feet.

Broad public awareness of these principles Klein/Mahler education would give each person resources for wellbeing: discovery of the form and function of his or her own musculoskeletal system. Study of the technique, practice of the exercises, would lead an individual to the zone where Klein/Mahler technique overlaps with and stands to contribute to physical therapy.

Klein/Mahler technique realizes principles in exercises that directly mirror, and therefore inform, walking. Study can help someone like me, who seemed to walk well enough. I have learned to take better advantage of my structure, thereby reducing strain on my lower back, thighs, and feet. People like me, while at little risk of losing our ability to walk, still stand to gain a lot from this education. This population consists of the majority of people on the earth.

We are an underserved population when it comes to gait training in the realm of physical therapy. From my survey of physical therapy literature, gait training is focused

on people who are clearly in need of it, such as stroke victims, people with spinal cord injuries, and people with prosthetics. Without it they may not walk; this is certainly worthwhile work. However, it is limited in scope. A synthesis of physical therapy and Klein/Mahler Technique would expand service, offering a thorough, deep approach to less obvious problems. A great number of ambulatory people could reeducate their bodies for increased function and health.

In parallel with its focus on people in great and obvious distress, physical therapy tends to focus on the part of a body that is in trouble. Volunteering at a physical therapy practice in Brooklyn, I saw patients who came for ankle, knee, forearm, and shoulder therapy. The physical therapist provided therapy directed to each patient's problem area. Patients were also instructed and supervised in exercises that centered on the area. The exercises would also involve neighboring joints of that limb and the same region on the other side of the body.

Most of these patients carried their pelvis tipped forward. The functional alignment of the pelvis in Klein/Mahler technique is key to reaping the benefits of dynamic alignment. Physical therapy treatment could be enhanced by using the principle of systemic integration of the body and forces acting in and on it. Demand for such treatment can grow as education empowers people to recognize the worth of investing the time and effort necessary to put the principle to practice in their own bodies.

"Thoracic Kyphosis Affects Spinal Loads and Trunk Muscle Force" provides scientific affirmation of the principles used in Klein/Mahler technique. This article by Andrew M. Briggs and others was published in Physical Therapy, May 2007. Their research showed that more hunch of a back produces more strain. More muscles are used

in the trunk. Pain and degeneration of function can follow. Klein/Mahler Technique engages people in standing upright, letting go of excessive muscle use. It is a systemic move away from pain toward greater function. The study on kyphosis focused on the thoracic spine, gathered data on the thoracic spine, and made conclusions based on the thoracic spine. This insight to the strain reduction benefit of alignment that takes advantage of skeletal support can be expanded upon, applied systemically. In scientific study and in a body, understanding may deepen and become more widespread with further study and vision. Range and ease of movement will increase; excess holding is released and strength of inner support, theoretical and practical, grows.

Vision is key to the scientific method. From visionary hypotheses come new discoveries. Susan M. Roehrig documents the benefit of expansive thought in a December 2006 article in Physiotherapy Theory & Practice. She applied a neurodevelopmental treatment to a patient with musculoskeletal and respiratory problems. The patient's kyphosis, was initially measured at 30°. With Dr. Roerhrig's innovative use of treatment it was reduced to 10°. The expansion of application of a technique was fruitful. Physical therapy will be enriched by synthesis with the principles of Klein/Mahler education and technique. Courageous imagination is vital to scientific progress.

According to Janet Carr and Roberta Shepherd's book, *Movement Science*, physical therapists function as applied scientists. Klein/Mahler Technique offers both interesting observable phenomena and theory. It offers views and a way of viewing to inductive and deductive researchers. In introducing Klein/Mahler Technique to physical therapy I expect to discover a dynamic alignment."Do you want to move or do you want to stand still?"