The Ongoing Development of “Past Beginnings”: A Further Discussion of Neuromotor Development & the Somatic Links Between Bartenieff Fundamentals, Body-Mind Centering® and Dynamic Embodiment®

Martha Eddy, CMA, RSMT, EdD

Introduction

In 1991, I was honored to publish an article for Movement News (the Newsletter of the Laban/Bartenieff Institute of Movement Studies) describing varying intersections between the pioneering work of physical therapist Irmgard Bartenieff – neuro-developmental understandings of movement – with those of Bonnie Bainbridge Cohen, Certified Movement Analyst (CMA), occupational therapist and founder of Body-Mind Centering®. The article, entitled “Past Beginnings” began,

There is growing interest in perceptual-motor development, as is evident by its wider acceptance in the various fields of movement science (for example, Sensory Integration in occupational therapy, Neuro Developmental Treatment (NDT) in physical therapy, research in motor learning in departments of physical education, and (the use of) the Kestenberg Movement Profile (KMP) and Body-Mind Centering® (BMC®) and their developmental theories in dance education, and dance/movement therapy. (Eddy 1991, p12)

Much has changed in the landscape of movement education and the neurological sciences over the past twenty years (Eddy 2000, Tortora 2006). Nevertheless, Bartenieff Fundamentals, as I learned it in the 1970s and practiced it with Bartenieff in the early 80s, continues to be a relevant guide in illuminating the emergence of movement skill in an infant and its impact on the ner-
vous system throughout the lifespan. This neuro-motor knowledge continues to find application in the fields of movement education (pre-school – 12th grade), motor learning, physical therapy, and dance therapy and dance in higher education, as well as in the newer fields of somatic education, somatic psychology, fitness, and pre and perinatal studies. In the 1980s, as a faculty member in both the certification programs of the Laban/Bartenieff Institute of Movement Studies (LIMS) and the School for Body-Mind Centering, I was often asked to share how the perceptual-motor development theories of Bartenieff (LMA/BF) link to those of Bainbridge Cohen (BMC). At the onset I used a Laban/Bartenieff lens to explain the BMC work to the LIMS community, as well as a BMC lens to more clearly teach the Bartenieff work. This process has been a great joy and has trickled down through the Laban/Bartenieff trainings. As a faculty member within both certification programs I carefully presented the work of each system, naming what was BMC and what was BF whenever possible. This work of distinguishing the different uses of these two approaches has now become the heart of the developmental work of Dynamic Embodiment – Somatic Movement Therapy Training (DESMTT), the certification program I began in 1991 to train somatic movement educators and therapists. My studies of motor learning at Teachers College Columbia University (Higgins), as well as principles of Dance Medicine and Science, further inform this inquiry. Since 1991, I have used “Past Beginnings” as a text for certification of somatic movement therapists and educators in Dynamic Embodiment, as an on-going guest faculty member of the School for Body-Mind Centering, in certificating movement analysts in Laban Movement Analysis and Bartenieff Practitioners, at conferences and in teaching students of dance, kinesiology, and cultural studies in numerous universities.

Writing again in 2011-12, I am re-examining and updating this integrative neuro-development movement theory and practice in light of the interweaving of Laban Movement Analysis (LMA), Bartenieff Fundamentals (BF), and Body-Mind Centering (BMC). This current article aims to share both historical and new perspectives on how neuro-motor development can be understood and taught from a somatic perspective. Specifically, in developing the curriculum for DESMTT over the past 20 years, I have fine-

1. I was fortunate to begin my lifelong study of somatics with both Ingriod Bartenieff and Bonnie Bainbridge Cohen in the late seventies. I went on to teach in each of their certification programs for over a decade, and then to develop my own training program - the Dynamic Movement Therapy Training (now distinguished from other somatic movement programs with the title "Dynamic Embodiment™"). From 1988-91 I co-taught Movement Observation at Antioch New England Graduate School with Susan Lomax (Kestenberg author and protege) for Dance/Movement Therapists that we shaped to include Kestenberg, Body-Mind Centering and Laban/Bartenieff components.

2. I have also noted that more LMA is finding its way into the BMC certifications. It began with Bainbridge Cohen’s study of LMA with Bartenieff. With her study of Action Profiling and KMP, planar analysis of reflexes emerged more strongly. I gave conference lectures on the parallels with BMC and LMA for BMCA. Currently Amy Matthews, CMA refers to LMA within SBCM.
tuned how BMC, LMA, KMP and BF can most efficiently interact to support embodiment, client satisfaction, and pedagogical methods.

The Basis for Movement Skill Acquisition: Neuro-maturational Theory or Dynamical Systems Theory?

During my movement science studies at Columbia University and while on faculty in the Kinesiology department of San Francisco State University I encountered new language to differentiate developmental experience — “neuro-maturational” and “dynamical systems.” These key terms, representing almost polar theories of motor development, helped me to make sense of what I learned when exploring both BMC and BF. Neuro-maturational implies that we mature organically in response to the inbuilt architecture of the nervous system. Neuro-maturational theory focuses on the emergence of developmental milestones in response to specific stimuli as an expected and predictable (almost reflexive) neurological unfolding of “pre-wired” motor patterns. These are posited to occur during key periods in the first year of life (Haywood and Getchell 2008). Dynamical Systems Theory (sometimes referred to as quantum, chaos or complexity theory) sees a movement experience as an interaction of the body in relationship to its environment and desired goals — an interdependent triad of body, environment and task. This theory of learning includes concepts like “disruption.” Disruption destabilizes a habitual pattern and therefore is an important aspect of how movement learning and skill emerge. Through disruption — being challenged and having to deal with what is unpredictable — we learn new coordination inducing new degrees of motor control. The Dynamical Systems perspective proposes that the body needs to be challenged by a changeable environment (Thelen 1995) in order to learn a new movement. Dr. Beverly Ulrich (2000), colleague of developmental psychologist Esther Thelen, defines a dynamic system as a “complex thermodynamic system that changes over time, reflecting the interaction of multiple components. Change in behavior often occurs non-linearly and the patterned output can be characterized by simple mathematical formulations.” Key principles are that systems (in this case individual humans) are self-organizing in response to the task and the context. There are key features, called “control parameters,” and as in other dynamic systems (such as the weather, crystals, animal behavior) there are patterns of activity that become attractors. Change occurs when the attractors are disrupted or are less stable. Ulrich applied this theory to motor learning among children with Down’s syndrome and found, for instance, that throughout the

---

3. See Rachelle Teacho’s, CMA Developmental chart – Figure 7
4. In 1997, I discovered that the Feldenkrais community was enthralled by Dynamic Systems theory. They invited Dr. Thelen to speak at their conferences prior to her death.
first year of life children self-organize to walk, and they do so in ways that differ from adults (as observed through biomechanical torque analysis on a treadmill).\(^5\) Destabilization leads to coping mechanisms — what Bartenieff would identify as new movement behavior. This principle of self-organization appears in the formative literature in the field of "somatics" (Hanna 1993). Self-organization provides a strong basis for the role of reflexes in infants, and even in adults. You see reflexive responses in falling activities in sports or within dance classes — especially contact improvisation jams. With surprise new skills emerge.

In my quest for research to explain the somatic experience of motor development and some of the claims being made by BMC to the movement science community, I initiated and piloted research in the mid-1990s, supported by the Body-Mind Centering Association (BMCA). I designed a study to be conducted in the polygraphic laboratory of Dr. Christine Kris, neuro-developmental psychologist and founder of M.I.N.D, the Multi-Disciplinary Institute of Neuro-Psychological Development. A group of BMC practitioners, some of whom were also Certified Movement Analysts (CMAs), sought to study a theory that underlies a large portion of Body-Mind Centering's neuro-developmental work — that specific developmental movement patterns, as practiced through simulated "baby movement" called the Basic Neurocellular Patterns, as identified by Bainbridge Cohen for BMC, support the firing of specific areas of the brain. For instance, "initiation by a reaching action of the tail stimulates the midbrain." Findings were published in Currents, The Journal of The Body-Mind Centering Association (Eddy 1995). No definitive proof was found at the time for brain-movement contentions from Body-Mind Centering due to the challenges of the experimental design; movement confounded the ability of the polygraphic equipment to record accurately.\(^6\) The research could be re-investigated more successfully now with functional MRI and other types of scanning methods. However, another key proposition I asserted in the article has become substantiated with the rapid development of the theory of neural plasticity — the idea that neuro-maturational and environmental conditioning as in

---

5. Eddy, 1995, p. continues "...Dr. Ulrich and her associates found that the degree of kicking activity in a child relates to the onset of walking. If they could encourage more kicking earlier on walking could occur earlier. Since literature showed that children with Down's Syndrome (DS) were less sensitive to stimuli it was postulated that stronger stimuli are needed (possibly in the form of more repetitions of leg movement through kicking or treadmill walking, or the addition of greater weight to increase the mass of the legs). Ulrich (2000) states "in theory, multiple systems affect patterns; strength and postural control are control parameters that allow independent walking to emerge, through repeated cycles of perceiving and acting one organizes stable patterns of behavior and affects the development of relevant subsystems (e.g., strength and control)." This theory includes the idea that we sometimes need to provoke instability in order to bring about new options. The result of her work are that infants with Down's Syndrome who received regular practice stepping on a treadmill, and practice kicking, learned to pull to stand 60 days earlier than their control peers who also had Down's Syndrome."

6. A limiting factor to the success of our research was that even with complex polygraphic equipment, assessment of movement was elusive to study. Correlational studies with movement analysis and Magnetic Resonance Imaging (MRIs) and/or direct Functional MRI research are suggested.
Dynamical Systems theory both act on our developmental experience, and that this occurs at all ages, with recognition that there is an extreme rate of development in the first in-utero year and the first ex-utero year of life. (Please note that there are also important growth spurts and brain development during puberty.)

I contend that Bartenieff and Bainbridge Cohen\(^7\) shared a working process, somatic in nature, which includes facets from BOTH of these leading theoretical approaches to motor development – neuro-maturational theory and dynamical systems theory. In brief – neuro-maturational theory is strongly based in “nature,” while dynamical systems theory supports the influences of “nurture.” Both Bartenieff and Bainbridge Cohen attach great significance to the existence and workings of nature, the neuro-maturational processes through the experiential study of reflexes and “developmental movement patterning.” What has always been fascinating to me is that both women were facile in “nurture” by being profoundly aware of the potency of intention and motivation to engage learners in change. This approach of engagement is similar to one component of the dynamical systems approach – the importance of stimulation through the environment. However the somatic approach defines environment with a far wider scope – beyond objects and architecture, environment includes caregivers and relationships. Indeed most CMAs and BMC practitioners recognize all movement as an expression of self in relationship to others – a relationship that leads to vast possibilities, a highly influential environment. In both BF and BMC we find that infants, children, and their parents, as well as individual adults are all highly responsive to neuro-maturational processes supported by environmental stimuli that, most importantly, include relational processes – how we interact as humans.

DynamicEmbodiment, my somatic movement therapy system, uses LMA, BF, KMP, and BMC constructs and a deep investment in relational processes supported by understanding from Dance/Movement Therapy and somatic psychology. Hence, I teach the interaction of neuro-maturation and dynamical systems within movement development and learning. I do not find them to be polarized theories. I exhort to my students: “Do NOT throw the baby [i.e., neurological and physiological factors] out with the bathwater [i.e., environmental features such as parenting, culture, economic status] as we teach a task [movement].” I also quote Tom Robbins: “It’s never too late for a happy childhood,” and guide practitioners to use dynamical systems thinking as they find gentle but effective “destabilizers” of habitual patterns. I feel this process is akin

\(^7\) It is interesting to note that Bainbridge Cohen studied with Bartenieff in the mid-seventies and then the work of Warren Lamb and Judith Keuneberg shortly after that.
to Alexander's inhibition. It should always involve developing secure relationships with students and clients so that the 'disruption' is not traumatic but educational. Furthermore, I demonstrate subtle methods with which nurturing behavior can impact on "nature" - changing the nervous system, especially when the person presents with trauma to begin with (babies with pre and peri-natal trauma or adults with a myriad of overwhelming life experiences). This of course is not always easy or automatic; it takes training. My experience when working with both Irmgard Bartenieff and Bonnie Bainbridge Cohen was that each woman chose to base her work in this combined approach to motor learning, acknowledging the profundity of our neurological system, our structure, as well as our capacity for adaptation, our ability to alter our behavior no matter how young or old. They didn't often speak of these beliefs during their classes; instead they graciously modeled the integration.

Change is an educational event. Each student and descendant of the Bartenieff lineage has learned that, to quote Margaret Mead, dear friend of Bartenieff, "The only thing we can count on is change." Furthermore, change is a constant. In 1995 (Eddy p 15), I wrote "...the nervous system is capable of great change due to neural plasticity. Healing and learning have almost limitless capacities as now made more evident in the neuro-biological research that has seen neuronal growth in adult brain cells. Somatic processes demonstrate that we can change our awareness by opening up our senses, inclusive of intero and extero reception. The ensuing perceptions from these sensations can provide entry points for inviting even our expectations to change."

I train my Dynamic Embodiment practitioners to embody and teach an orchestrated understanding of human motor development in four parts: (1) neuro-motor organization (see Figure 1), (2) perceptual-motor milestones (in broad and flexible ranges - see Figure 2) that includes concepts from my certification research in both BMC and LMA with vision and movement, (3) being schooled in traditional reflexes as well as in Bainbridge Cohen's postulated reflexes (Figure 3), AND (4) being aware of missing links in theories, postulating new options. Using the principle of "improvisational mind," faculty from DE-SMTT/Moving On Center (our non-profit entity) teach the importance of being responsive to any changing influences - attitudes, biochemical factors (e.g. nutrition), the home, school or work environment, and interpersonal behavior. I contend that most somatic approaches work in this way - attending to the contextual and motivational features of the task while also focusing on a deep understanding of the body in movement. BMC and BF are systematic, developmental approaches. Feldenkrais practitioners, the protégés of Barbara Clark (Idokinesis
work), and the Alexander teachers who use Dart Techniques are among the other somatic educators who use developmental concepts within their systems (Eddy 2003). In DE-SMTT we study these as well as Developmental Movement Therapy models from Florence Scott, Bette Lamont and Veronica Sherborne.

Shared Models of Perceptual-Motor Development

It is my delight to share each of the amazing contributions of these diverse somatic systems, how I see them as interacting, and how I have since applied and developed them as curricular elements and in my private practice. I particularly like to teach “when to use which” exercises/strategies. I also ask, “Somatics for what?” I encourage students and graduates to pursue somatic study with a focus on how they plan to use the embodied knowledge so deeply based in self. This reflection enables students to begin to practice the transfer of knowledge needed in work and performance; practice allows new learning to become useful instantly. Bartenieff and Bainbridge Cohen’s ideas and practices provide much leverage for effecting change within dance, movement performance, health, wellness, therapy, and education.

Bartenieff constantly integrated her knowledge as a student of Rudolf Laban, as a physical therapist, German modern dance pioneer, co-founder of dance therapy, creator of the course of study called Laban Movement Analysis, dance ethnographer, and leader in non-verbal communication. She created Bartenieff Fundamentals, referred to first as a body therapy (Myers, 1980) and now known as one of the first generation of somatic education modalities (Eddy, 2009). She integrated perceptual-motor developmental theory with this vast movement understanding to create both a system of exercise (the Basic 6, their preparatory exercises, and the Propulsion series) as well as numerous movement principles that support the Laban themes of the constant interplay of exertion/recuperation, mobility/stability, function/expressions and internal/external experience. Other central features of ‘Laban thinking’ are embedded in her work: that every movement can be perceived as involving the body moving through space with effort dynamics and shaping processes; that space is three-dimensional and so is all human movement; and that how we prepare for and initiate a movement determines the course of the action (Bartenieff and Lewis 1980 p 21).

Laban also held as an ideal that we dance with our whole body-mind, as a somatic being. “The good man is he who exemplifies in his movement, physical, mental and spiritual values as a unified whole.” He goes on to say, “The practice of body-mind movement in all of its variations has to be supplemented by a thorough research into the nature and the ramifications of movement.” (Thornton 1971, p 25) From this holistic
base, Bartenieff did extensive research and chose to analyze closely how people relate to the environment with the most efficient use of movement effort. One outcome was the creation of the “Basic Six” exercises to aid her physical therapy patients, her students of Laban Movement Analysis, and all those who dance and move.

The language used in the teaching of Bartenieff Fundamentals and the naming of the “Basic Six” reflects Bartenieff’s bias as a Laban-trained movement educator in that it describes neurologically specific “body level” occurrences in vernacular terms with references that include body parts, actions, and spatial relationships. The following chart (Figure 1) illustrates the words that Bartenieff Fundamentals uses to talk about bodily organization – the relationships of body parts or connections that proceed in a developmental order. It is compared with the terms used in Body-Mind Centering that come from Bainbridge Cohen’s study as an occupational therapist and as a student of Bartenieff and another physical therapist, Berta Bobath.

**Figure 1: Developmental Organization of Body Part Relationships**

<table>
<thead>
<tr>
<th>Bartenieff Fundamentals</th>
<th>Body-Mind Centering</th>
<th>Dynamic Embodiment</th>
</tr>
</thead>
</table>
| Body Organization (Bartenieff)  
Or one can refer to Patterns of Total Body Connectivity (Hackney), which is similar to the DE improv that elicits a particular state of mind for each stage. | Basic Neurological Patterns (BNP)  
Now referred to as Basic NeuroCellular patterns to reflect newer embryological study (Bainbridge Cohen 2011) | Neuro-Developmental Organization (NDO)  
of perceptual-motor coordination and expression |
| Breath | Breath (cellular and lung) | 3-Dimensional Breathing  
(begins with conception) |
| Core-Distal (Central-Peripheral condensing and expanding) | Navel Radiation  
(also informally referred to as radial navigation) | Core-Distal condensing and expanding (begins in-utero) |
| Head-Tail Connection | Spinal Patterns | Head-Tail Coordination  
(practiced in- & ex-utero) |
| Upper-Lower Connection | Homologous Patterns | Symmetrical Upper-Lower Coordination |
| Body Half Connection | Homolateral Patterns | Right-Left Body Half Coordination |
| Diagonal Connection | Contralateral Patterns | Contralateral Quadrants |

Other taxonomies include the following words listed in developmental order:

---

8. Pam Schick and Kadzie Penfield proposed a renaming of the Basic 6 in order to reinforce the logic of the work with consistent language. Hence the use of terms like Pelvic Shift in Sagittal (ie, Forward Pelvic Shift).
respiration
coduction — release or grow-shrink
caudal-cephalic
bilateral symmetry
unilateral or lateral symmetry or ipsilateral
asymmetrical opposition.
The above relationships are recognized in
many schools of movement science as stages
of neurologically developmental movement.
The body organization emerges as infants
learn to roll, crawl (on belly), creep (on all
fours), sit, stand, and move at all levels in all
three planes. Each of these three somatic
systems distinguishes itself from more tradi-
tional approaches to movement study in
two ways: (1) Each begins the study of the
developmental process with the acknowl-
edgegment of breathing as the most funda-
mental movement. (2) Each also has been
working with in-utero patterning for
decades, long before much pre-natal
research had begun teaching movement pat-
terns that are in-utero precursors to all
other movement. Both BMC and BF prac-
tice breath patterns and movement in and
away from the navel center as in core-distal
expansion and contraction and recognize
these as movement organization that occurs
before birth. Bartenieff practiced but did
not name condensing and expanding as a
type of body organization; Peggy Hackney
did so in consultation with me — recogniz-
ing condensing and expanding as a “Core-
Distal connection.” Movement scientists
in the 1980s generally didn’t systematically
retrain movement patterns using a model of
underlying embryonic breath and volitional
or reflexive fetal movement.

Comparing Bartenieff Fundamentals
(BF) with Body-Mind Centering
(BMC)
Over the past 30 years I have given over one
hundred lectures, master classes, or longer
workshops on perceptual-motor develop-
ment or on the developmental aspects of
BMC or the developmental components of
BF. When teaching Dynamic Embodiment
Practitioners and other somatic movement
educators and somatic movement therapists
about the effect of early infant movement
experiences on childhood and adult move-
ment behavior I teach what contributions
BF and BMC each bring and “when to use
which.”

What is common to BF and BMC
Both systems identify the same stages of
development from conception, through
birth and, as infants grow to toddlers by
learning to roll, crawl, creep, sit, stand and
walk. Bainbridge Cohen’s system echoes
that of Bartenieff’s — that these stages
repeat themselves as patterns of movement
in all levels in space, are explored in differ-

9. I brought condensing-expanding into the BF/LMA developmental progression when I identified that these movements fulfilled the
criteria for in-utero movement patterns as taught in BMC. Peggy Hackney and I brainstormed names and agreed on this term: Core-
Distal Connectivity. She also proposed notation for each of the stages that we refined together. In the Dynamic Embodiment training
when I teach the sequences from BMC — the basic neurocellular patterns (BNP) identified as Series I and Series II I also begin with
BF’s condensing and expanding to embody the Navel Radiation phase.
ent planes, and continue to be in effect at all ages in life as organizational features of any movement.

Bainbridge Cohen emphasized that neurological connections are made with practice and repetition. This may have been influenced by her experience of Bartenieff's insistence that you always apply an exploration of a body-part relationship to weight transference (key component in locomotion) and level change (a type of locomotion).

Both systems insist on embodiment of the patterns, teaching them both through exploration and through sequences, and that each pattern builds on the previous one. They recognize that these movement patterns work to develop neuro-motor advancement and movement efficiency. In studying movement dynamics I also noted that they share various philosophical themes (Eddy 1992) as depicted in Figure 2.

**Figure 2 Themes Underlying BF/BMC Movement Concepts**

*From Eddy, 1992 "Physiological Underpinnings of Effort"*

<table>
<thead>
<tr>
<th>Laban/Bartenieff</th>
<th>BMC®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility and stability in any action</td>
<td>Mover/Support</td>
</tr>
<tr>
<td>Internal experience is reflected in external</td>
<td>Inner/Outer Focus</td>
</tr>
<tr>
<td>movement</td>
<td></td>
</tr>
<tr>
<td>Functional or expressive aspects of any</td>
<td>Body/&quot;Mind (state)&quot;</td>
</tr>
<tr>
<td>movement</td>
<td></td>
</tr>
<tr>
<td>Interplay of Exertion and Recuperation within</td>
<td>Mover/Shadow (Jungian</td>
</tr>
<tr>
<td>a task</td>
<td>construct)</td>
</tr>
</tbody>
</table>

The importance of sounding in movement is a common feature in both systems. In BMC sound development is taught as part of motor development with, for instance, special explorations with the tongue stabilized on the roof of the mouth and a full exploration of the shaping of the pharynx and larynx. When I arrived in the LMA certification program I was inclined to use the voice when moving. When Irmgard Bartenieff taught her use of the "oo" "ah" "ee" as breath support for movement I was delighted to have this spatial analysis for vocal work. Around this time Bonnie Bainbridge Cohen also shared that her vocal work had been developed as her LMA certification project. It is the basis for her vocal manual and her chapter on voice in her book Sensing Feeling and Action. Working with vocalization as a form of movement and using spatial intention as a motivation for sound production is integrated in Dynamic Embodiment. While sharing many similar beliefs they also differed.
Ways in which BMC and BF differ (considered further in Figure 3 below):

Infant or Adult applications

Body-Mind Centering gives permission and guidelines for adults to explore embryological and infant movement again, to regress into infant perceptual-motor behavior, and to discover one's internal imprint of early movement patterns. It also provides detailed charting of infant experience to support parenting and therapeutic interventions for infants and toddlers.

Bartenieff Fundamentals also works with neuro-motor patterns of movement but introduces them in more adult forms. For instance much of the movement is explored on the back, in supine position, which can often feel more comfortable for adults, who typically have less joint padding and flexibility than infants. The BF movement appears more intellectual (or adult) in its motivation involved with exploring initiation of body parts in space.

Bartenieff published writings about the neural implications of developmental work in scholarly journals focusing on her work with adult patients, and cultures (Body Space and Brain; 4 adaptations). Bainbridge Cohen (1993; 2006) articulated neurological stages clearly in classes and did observational research with infants for decades.

BMC's repertoire is more reflexive and full of surprise. Consciousness of the outer world emerges as result of the effect it (parenting, clothing, room, nature) has had on the body (and mind) in movement. BF is more mental, driven by adult awareness and relationship to the outer world (spatial intention along with inner attitudes). Figure 3 outlines these ideas.

Figure 3: Contributions of BMC and BF to Working with Development Movement

<table>
<thead>
<tr>
<th>BMC in Developmental Progression</th>
<th>BF in Developmental Progression</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motivation:</strong> developmental patterns as universal primal movement</td>
<td><strong>Motivation:</strong> Performance of patterns with awareness of spatial intention and effort</td>
</tr>
<tr>
<td><strong>Predominant positioning:</strong> Use of prone position; more similar to babies who are used to tummy time and have strong flexor tone from birth experience</td>
<td><strong>Predominant positioning:</strong> Use of supine – more comfortable for adults; Basic 6 as response to keen observations of what is lacking or inefficient in western culture.</td>
</tr>
<tr>
<td><strong>Key Concepts:</strong> Differentiation of point of initiation – yield &amp; pushes versus reach &amp; pull; equal &amp; opposite reflexes</td>
<td><strong>Key Concepts:</strong> Use of different type of weight shifts; understanding of reflexes; focus on level change</td>
</tr>
<tr>
<td><strong>Strengths:</strong> More head-tail experiences; Connect to body-mind relationships including emotions (e.g., frustration as a motivation rocking leading to propulsion)</td>
<td><strong>Strengths:</strong> Relationship to space is emphasized; head tail is active in level change (propulsion sequence)</td>
</tr>
<tr>
<td><strong>Relational:</strong> Perceptions are major motivator for movement; initiation from the senses</td>
<td><strong>Relational:</strong> Bridging to the environmental, personal process in relationship to others.</td>
</tr>
</tbody>
</table>
Contributions of Eddy’s experience with Body-Mind Centering to the exploration of Bartenieff Fundamentals

In the mid-1980s, I was invited by Fran Parker in NYC and Peggy Hackney on the west coast to teach Body-Mind Centering to CMA trainees in the LIMS certification programs. In preparation, I spent time using “Body-Mind Centering” logic (concepts, principles and movement of infant motor development) in considering the Bartenieff Fundamentals exercises and explorations. First I had to determine what was significant about BMC’s approach to development. I assessed that Bainbridge Cohen made three major contributions to the study of human motor development.

1. She had us work on our bellies doing movements in as close a simulation to what babies do as possible.

1. As she guided us through early infant movement experiences, she talked about Push, Reach and Pull which later became “Yield and Push” and “Reach and Pull.”

1. She also taught the underlying support of the reflexes in development motor control and coordination, systematically establishing her own theory of “equal and opposite reflexes.”

Teaching Bartenieff Fundamentals through a Body-Mind Centering Lens

Types of Initiation

In order to teach BMC developmental concepts in a manner that was most relevant to the CMA community I identified in Laban terms what Bainbridge Cohen meant by push and reach patterns. (Yield as a precursor to pushing was a later BMC development — see more below.) In my estimation Bainbridge Cohen, because she was trained by Bartenieff in Laban Movement Analysis, was able to distinguish between locomotor movement that was “led by” the head as different from movement that resulted in movement of the head (and body) through space; she saw these as emanating from two different points of initiation — a push or a reach. In 1991, with 15 years of BMC work

10. EBC’s postulated reflexes (further reflected in Figure 5) are now accepted by other international authors, most notably Dr. Svetlana Markanova (2007).
under my belt I defined a push and reach pattern in LMA terms:

A push pattern is a movement that travels from one part of the body through the core of the body, usually deriving its impetus from interaction (pushing away from) with another surface (the floor, the uterine cervix, another person). For example, a spinal push from the head begins at the head and sequences tailward. Push patterns give the body a compressed feeling. This compression reinforces a bodily sense of self and provides as well an experience of support from the environment. This is entirely different from pushing something (or someone else) away.

A reach pattern is most efficient if it follows a clear experience of pushing. It travels from one part of the body outward into space, pulling along the rest of the body as a follow-through of the movement. For example, a spinal reach of the head initiates with the head and often leads to a change of level for the entire body, or at least an elongation out into space. Reach and pull patterns give the body an expansive feeling. They increase one’s kinesphere and serve to make connec-
tions with the environment (including other people). (Eddy 1991 p 13)

The emergence of Yielding: Some years later it became important to discuss what the baby was pushing away from and how it made enough contact (gained enough internalized support) in order to be able to then separate. What does it take to effectively push oneself away? We have to give in (yield) to a surface, supported by gravity (weight sense) before we can activate our strong weight to extend away from this contact. This statement is laden with metaphors that are key in the developmental relational process.

The pull is the culmination of the reach that ends with a weight transference – at least one step. I came to distinguish between “extension of limbs” and “reach patterns.” The reach involves an extension into space that goes further to takes you out into the environment, often destabilizing your center of weight. The resulting movement (a fall or a step) reconnects you to the earth and allows you to then pull, regathering you to land safely in the next spot, weight transferred (to a new vantage point). An extension can happen as a gesture with no ensuing reach and weight transference or can come as a result of a push pattern.

Each of these four processes is critical to an effective action and has also become a metaphor for relating to others (Aposhyan 1993; Hartley 1995). Important factors in under-
standing the role of yield and push and reach and pull in development are:

1. “yield and push” underlies “reach and pull” AND

2. when initiating with one limb a well-executed push thrusts through the body homolaterally (compression through body tissues)

3. a well-executed reach and pull brings out a muscular cross-lateral connection (activating the diagonal kinetic chain).

**Distinctions**

As I considered what is common and what is different about BF and BMC I also became aware of several nuances that reflect the different vantage points of each system. These further inform “when to use which” as interventions. They are:

1. The upper lower connection in BF is often not homologous. Upper or Lower movement that involves lateral flexion of the spine is not homologous; I determined that this is instead a precursor to homolateral movement (as in thigh lifts to the right or left while lying on one’s back). Any upper or lower movement that involves spinal rotation is actually a precursor to contralateral movement. In other words, gestural or postural movement in the horizontal plane is the beginning of a diagonal. The only pure homologous movements that involve the core as well are in the sagittal plane. One can move homologously (with symmetrical use of two paired limbs) into other planes (e.g., jumping with a maintained shape to the side — but this is probably better seen as whole body unitary action) or by gesturing symmetrically in the horizontal dimension or vertical plane (e.g., as in jumping jacks). Homologous (same knowledge) means using both arms or both legs in the exact same way. Upper-lower organization simply asks you to separate the upper and the lower, as in stabilizing one while mobilizing the other.

2. Homolateral/Body Half movement have different body level phrasing:

A subtlety worth watching for is whether one is initiating from any two limbs simultaneously or sequentially. One can organize movement around any one of the body part relationships by either initiating simultaneously or sequentially. This also involves an analysis of the use of stabilizing and mobilizing parts. For example, in exploring the Head-Tail connection the head and coccyx may move together, either towards or away from each other, or the head can move away from the coccyx while the coccyx stays still and vice versa, when the head moves as the coccyx stabilizes. Finally one can randomly move segmented parts of the spine or any combination of the above. Push and reach patterns are generally sequential — moving from the point of initiation sequentially through the body.

---

11. See Betsy Kagan, CMA on Body Level Phrasing for a clear delineation of unitary, simultaneous, sequential and segmental movement.

The most common somatic feature is that neuro-motor development provides building blocks for adult movement. BMC provides nuance and detail to the neuro-motor process. Therefore, central to the DE-SMTT approach to teaching BF exercises is to explore the Bartenieff exercises in developmental order using BMC developmental logic. This includes all the concepts outlined above plus an understanding of basic motor developmental guidelines such as:

- Upper body control precedes lower body control
- Core precedes distal control
- Awareness of the contribution of the underlying reflexes and
- the relationship of movement coordination to brain stimulation

Newer ideas:
- The importance of lower brain structures (sub-cortical) in behavior
- Attention to whether the initiation is a yield into push or reach that could become a pull.

The Basic Six in NeuroDevelopmental Order

As I played with the Basic Six Exercises with attention to push and reach patterns I also used Bainbridge Cohen's notion that push and reach patterns are fulfilled when integrated into the repetitive rhythm of locomotion. If there was no level change or traveling through space I concluded that the movement was simply an exploration of connections (as are typical in utero). This is evident in doing Bartenieff Warm up exercises that are referred to as closing and opening, or "X's and O's." These are all aspects of navel radiation (term used by Bainbridge Cohen) and Core-Distal Connectivity (term developed by Peggy Hackney in consultation with me), and that I now refer to as "Core-Distal Condensing and Expanding."12

The outcome was that I classified the BF Six plus two more exercises in the following categories: Non-locomotor ("in-utero") Condensing and Expanding Movements, Locomotor Push-Initiated Movements, and Locomotor Reach-Initiated Movement. Remember that in this definition "locomotion" can be either traveling across space or changing level. Bartenieff was convinced that changing level and locomoting activate subcortical brain structures. Thus in every class she incited us to "GET UP" and to "MOVE through Space!"

Non-locomotor Condensing and Expanding Movements

1. Thigh Lift (ilio-femoral flexion)
2. Body Half in supine (limb flexion and extension with core support)

12. The BMC work explores different limb relationships within Navel Radiation (Core-Distal) especially in triangle relationships (See Otslock's article from Impulse, now out of print, but in Eddy, 2003)
• Ilio-femoral flexion – is facilitated by a homolateral push on the standing leg to help stabilize the connection to the lesser trocanter. However, the major action of flexion is just one spoke of the six-spoked wheel of core-distal condensing and expanding. Ideally this action should be explored with each arm and even practiced with the head and the tail individually and together.

• Body Half – can also be achieved if initiated by a homolateral push of any one limb – indeed this is the basis for homolateral belly crawling. When no push is involved the pattern is simply a navel radiation condensing and expanding in and away from center.

**Locomotor Reach Movements**

5. Pelvic Shift Forward (in sagittal plane) uses the reach of the tail and the sit bones simultaneously to propel upward and forward in space.

6. Knee Drop can be done as a Knee Reach (taught as such in 1982, and named in 1984). In each case one knee moves into outward rotation and the other into inward rotation as the legs move into the lower diagonal quadrant. Initiating with the reach differs from the drop in that it is an active elongation of each independent leg versus a more passive releasing of each leg into the socket. The reach elicits deep diagonal connections, setting up two pathways of diagonal tension through the body and a deeper twist at the waist furthering the counter-tensile experience through the opposite arm. Each is an important option depending on the client.

7. X-rolls are a perfect exploration of the reach of one limb initiating contralateral connections while traveling through space. Its signature is the maintenance of full extension through the spine and limbs while using gradual internal/external rotation and gradated use of flexion/extension with adduction/abduction through front and backspace.

This analysis of the role of push and reach in initiation and support in each of “the

---

15. Thanks to Betsy Kagan, CMA for insisting that the reach aspect of the heel rock is equally important. Upon exploring this I can now answer my own question When to use which? Emphasize the push phase of the heel rock for grounding and lengthening lumbar spine. Use the reach phase for elongating and finding the natural curve of the lumbar spine.
Basic Six (or 10!) confirmed that ilio-femoral flexion and the supine Body Half are forms of condensing and expanding from center, core-distal connections.

It left (8) the Lateral Pelvic Shift (in the horizontal dimension) for further analysis. Since the lateral pelvic shift uses a slight level change it is clearly also using underlying push patterns. Indeed it requires a symmetrical push from each leg to lift a tad off the ground, and then is facilitated by an underlying push of the leg on the opposite side of the direction one is moving in. However from everything Bartenieff cued us to do it seemed important to consider that it might also involve a slight reach of the leading trocanter. According to BMC theory push patterns are supposed to feed through the same side. However, one can easily use the push of one leg to curve the side of the body and spine away, causing the pelvis to project outward to one side. This is a planar movement though. Bartenieff taught the Lateral Shift as uni-dimensional. It is a much harder movement requiring the limiting of degrees of freedom in the multifaceted ilio-femoral joint. This made me wonder if there might be other more complex factors inherent in purity of the lateral shift. I contend that the Lateral Shift uses the push power of the leg for support but also includes a reaching action of the trocanter engaging all the hip rotators in a balanced action that helps define the movement in one dimension. It is no wonder that Bartenieff had at least a dozen other exercises for working with lateral shifting. Perhaps you recall body half weight shifts from the quadrupedal position – leading into low level barrel turns. This one requires a lateral weight shift, as done with any leg swing in the Propulsion Sequence. Another important exercise was the lateral weight shift from kneel-sit. Beginning from kneeling you laterally shift with awareness of the subtle diagonal tensions, come to sit on one hip, then on both sit bones with knees coming up, and then descend onto the opposite hip and finally with as minimal lifting as possible laterally shift to the opposite side. This can continue forever. Its best to switch directions!\(^\text{15}\)

This process of analyzing the Bartenieff work using this movement analysis-based developmental logic evolved into the sequence in Figure 4. It calls upon just the classic Basic 6 together with the pre-thigh lift and heel rock. I have ritualized this progression of BF using developmental markers. I teach it in Dynamic Enabodiment and in BodyMind Dancing© classes. It remains a structured improvisation based in the experience I had as a student with Bartenieff – that the Basic Six are just a starting

\(^{14}\) Robert Ellis Duan and I co-taught for numerous years and exchanged notes on many details of movement. He often spoke about how dimensional movement was much harder than movement that is fully expressed in 3-planes or limited to one plane.

\(^{15}\) These exercises were described and elaborated on in Bartenieff’s unpublished manuscript that Peggy Hackney refers to in Making Connections, and that is part of the Bartenieff Estate.
point or "checking in" place. They are to be applied, used, improvised with and turned into dancing. It is great to move out of the predominantly sagittal nature of the developmental sequence into rolling, turning, twisting and spiraling. I have used this more expanded sequence as a basis for a performance piece called This Old House in which I pay homage to my teachers (August 2010 SFDI, YouTube upload). I have shared the process of looking at the BF exercises through the lens of Developmental Progression as I first learned it from BodyMind Centering since the mid-1980s. It is now taught during most certification programs and Peggy Hackney chose to use this logic and organization in her book Making Connections.\footnote{In this comprehensive book on Bartenieff Fundamentals by Peggy Hackney it is not always clear which exercises were developed by Bartenieff and which come from Bainbridge Cohen or from Peggy Hackney. One tip is that if the exercise is done in a prone position it is most likely from BodyMind Centering. If it begins in supine it is probably from BF. One exception is the Hang & Hollow developed by Hackney.}

Bartenieff Fundamentals and Reflexes

Another way that I analyzed Bartenieff’s work was to systematically research what reflexes underlie each of the Basic 6 (or 10!) exercises, as I like to say. Irmgard wrote about the role of reflexes in movement and brain functioning in several articles. She didn’t explicitly teach this work within the certification program. However it was a key part of her understanding of movement and her observational skills. I therefore did this analysis using a full palette of proposed reflexes, as created in BodyMind Centering (See Figure 4.) If you are unfamiliar with primitive reflexes and righting reactions, or responses, please consult references to Bartenieff’s writing as well as those of Bonnie Bainbridge Cohen.

A reflex is a “specific, automatic, patterned response that is elicited by a particular stimulus that does not involve conscious control.” (Fiorentino 1991, p 71). Furthermore Fiorentino tells us (p 12), “Our total postural behavior is the result of the interaction of reflexes and the relative strength of each one of them.” Early reflexes and postures are basic developmental patterns that are processes within the CNS (central nervous system). They are integrated, modified and incorporated into more complex patterns in order to form the background for normal, voluntary movement and skills.” (Eddy 1991, p14).

Bainbridge Cohen watched hundreds of babies and studied films of them as well. She chose to have all certification students learn “infant” reflexes through the embodied practice of them. She encouraged us to explore how to let go of cortical control of movement and to allow deeply embedded reflexes to emerge again. As she taught the common reflexes she found there was a gap in movement training.
Figure 4: Dynamic Embodiment Fundamental Development Sequence
(This sequence places the Basic 6 or 10 exercises of Bartenieff Fundamentals in Neuro-Developmental Order.)

Explore **Breath** Coordination (begins intratero)
- Breath in each of the three dimensions
- 3D Breath and vocalization (so with sagittal, oh with vertical, ee with horizontal)

Explore **Core-Distal** Coordination (intratero)
- Condensing and Expanding in **Big X** (up onto forelegs and forearms)
- Simple Relationship from Sapien X position: explore isolated limbs as gestures between the center of the body and each body part
  - Pre-thigh lift and extension
  - Thigh lift and extension
  - Arm flexion and extension
  - Head and tail flexion and extension

**Complex Relationships:** Repeat combinations of 2 body parts moving simultaneously through center
- Head and tail flex and extend
- Upper limbs flex and extend
- Lower limbs flex and extend
- Left limbs flex and extend (left BODY HALF)
- Right limbs flex and extend (right BODY HALF)
- Right arm and left leg flex and extend (diagonal gesturing)
- Left arm and right leg flex and extend (diagonal gesturing)
- (BMC continues this exploration with triangular relationships)

Explore **Head-Tail** Coordination (During Birth and Extratero)
- Condense from big X into half ball shape on forelegs with head on ground
  - At the low level in sapien: Discover the activation of the tail in preparation for pelvic shifts forward. Use the Reach of the Tail (and sibones) to initiate Pelvic Shift Forward
  - Mid level: Use flexion/extension of head and tail simultaneously or sequentially from quadrupedal position separately or in coordination with ilio-femoral flexion (BF PROPULSION sequence)

Explore **Symmetrical Upper-Lower** Coordination
- Prepare with the **Heel-Rock** (push of heels, reach of heels and toes done with symmetrical legs)

**Pelvic Shift** Forward in Sagittal Plane: emphasize active weight transfer over the feet (ankle flexion)
- Upper Body Wrist Rock * (place hands in crab position over head with palms down; push-reach-rock)

Explore heelrock and PSF at seated and standing levels

Explore **Right-Left Body Half** Coordination

Review **Body-Half** Movement in vertical plane with midlimb initiation and then add horizontal rolling of body half to opposite side; does not cross midline but carries whole body half to other side as in barrel turning on the floor. (Kadri Penfield has been using this movement for years. I added a simultaneous push off of the floor from the hand and foot to return to the back.)
- Explore other initiations for Body Half (simultaneous matching of distal and proximal joints of each limb)

**Lateral Shift** explore a push of one leg to help clarify action or lateral shift and contrast with initiation of a reach and pull from the trocanter, either should feed through the pelvic floor and hip rotators.

Explore **Coaxial-Internal** Coordination

**Knee Drop** set one of diagonal spine through a passive drop of the knees into the lower quadrant of one side of the body
- Distinguish from knee reach* in order to engage the full diagonal kinetic chain through the lower to the opposite upper quadrant I applied the BMC concept of initiating with a reach of the knees; sense the activation of the leg muscles in an elongated pull that connects through pelvic floor to psoas and iliotibialis

**Arm Circle** again, actively heed the Bartenieff cue to maintain a large kinesthetic in order to facilitate the cross-lateral reach patterning.

---
1 I identified the heel rock as a homologous push of the lower body.
2 Betty Kagan emphasizes the reaching into space of toes as an alternation of the push of the heels.
Much as a Dynamical System theorist would, she postulated that there were important tasks that must be accomplished to gain volitional control of certain movements. She derived the theory that for each reflex there must be an equal and opposite reflex. From this deduction she began to name reflexes that would modulate reflexes that had been discovered and named in laboratories (e.g., Asymmetrical Tonic Neck Reflex (ATNR), Gallant, Moro, Symmetrical Tonic Neck Reflex (STNR) etc.) For instance, relative to Right-Left Body Half modulation, Bainbridge Cohen named the Hand-to-Mouth* reflex as a modulator of the Asymmetrical Tonic Neck Reflex. In the ATNR, when the head is turned in a newborn the face side limbs will extend and the skull side limbs will flex creating a “drawn bow and arrow” position. With Hand-to-Mouth a baby can turn the head and flex that particular side’s limbs in, allowing the fingers to find the mouth. Further, she found that these two patterns together underlie amphibian belly crawling – the homolateral push of the lower. Each of Bainbridge Cohen’s newly named reflexes is marked with a single asterisk (*).

Bainbridge Cohen’s contribution to this field has been to identify new reflexes as indicated by the *s in Figure 5. Cohen observed the equal and opposite movement modulating reflexes and named them as additional reflexes. From a dynamical systems point of view they could simply be a different movement, helping to coordinate a specific motor task. For instance, the hand to mouth reflex allows for self-feeding while the asymmetrical tonic neck reflex is postulated to keep a newborn from rolling away. What is important is that the “integrated movement” frees the mover from no longer being bound to only responding in one predictable way. Volition emerges – a choice of actions in relationship to the same stimulus. Bainbridge Cohen reminds us of the significance of reflexes in adult movement, stating “It is important to note that when we look at integrated movement, we are not seeing isolated reflexes but rather their underlying support and influence on movement (Bainbridge Cohen, 1989). I then applied this thinking to a study of the Bartenieff Fundamentals, knowing full well that Bartenieff was well aware of these connections too.

In analyzing the BF, I found that there are reflexes that underlie the opening position – supine with flexed knees, hips and ankles with feet “standing” on ground. I then identified the reflexes that supported the specific exercise. I then noticed what types of initiations had no named reflexes to account for the initiation of the action. In this case, one might assume that the movement is volitional adult movement. However it is also possible that there are some neurological underpinnings that as of yet haven’t been accounted for. I have given any unidentified action a name and mark it with a double asterisk (**). As you can see this territory is ripe for future study.
**Figure 5: Equal and Opposite Reflexes Support Motor Development** ©Martha Eddy 1991

<table>
<thead>
<tr>
<th>Neuro-Motor Stage</th>
<th>Reflex</th>
<th>Equal and Opposite Reflex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head-Tail Coordination</td>
<td><strong>Oral Rooting Reflex (head rotating and returning to midline; with lower lip stroking as stimulus – flexion of head and return to center; with flexion of upper lip extension and return to center)</strong></td>
<td><em>Anal Rooting Reflex (tail rotating and returning to midline; tail flexing and returning to neutral; tail extending and returning to neutral – all stimulated by touch)</em></td>
</tr>
<tr>
<td></td>
<td>Gallant (lateral flexion) stimulated by touch on the back</td>
<td><em>Abdominal Reflex (lateral flexion if stimulated by touch of the stomach)</em></td>
</tr>
<tr>
<td>Note: I postulate that we need equal stimulus to resolve the movement of return to midline or center such as in:</td>
<td>Body on Head or Head on body righting reaction</td>
<td><em>Neck Mobility</em></td>
</tr>
<tr>
<td></td>
<td><strong>Extension stimulated by symmetrical touch to the back when in prone position</strong></td>
<td>The Abdominal Reflex when stimulated along the midline of the body or symmetrically along both sides can induce spinal flexion</td>
</tr>
<tr>
<td>Symmetrical Upper-Lower</td>
<td>Moro (or Startle Reflex)</td>
<td>Phase 2 – Flexion (see Feldenkrais, the Elusive Obvious)</td>
</tr>
<tr>
<td></td>
<td>Symmetrical Tonic Neck Reflex</td>
<td><em>Inclined Symmetrical Neck Reflex</em></td>
</tr>
<tr>
<td>Right-Left Body Halves</td>
<td>ATNR</td>
<td><em>Hand-to-Mouth Reflex</em></td>
</tr>
<tr>
<td>Contralateral Quadrants</td>
<td>*Tonic Lumbar (practice on right and left)</td>
<td>*Tonic Reach (practice on right and left)</td>
</tr>
<tr>
<td></td>
<td><strong>Midlimb Flexor Withdrawal</strong></td>
<td><strong>Postulated by Eddy DS-SMTT</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Midlimb Extensor thrust</strong></td>
<td><strong>Postulated by Eddy DS-SMTT</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Lateral hip thrust</strong></td>
<td><strong>Postulated by Eddy DS-SMTT</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Extensor thrust of hand</strong></td>
<td><strong>Postulated by Eddy DS-SMTT</strong></td>
</tr>
</tbody>
</table>

The Basic Six and Reflexes
In teaching within the DES-MTT program I expound that learning the basic neuro-developmental patterns and some key reflexes, righting reactions and equilibrium responses helps you organize your own movement and perception and helps in observing infant, children and adult movement more accurately. This is a somatic (body-mind integrated) approach to learning that relies on your first-person subjective experience as well as on cognitive memory. In Figure 6, I refer to both (a) those reflexes needed for an infant to first achieve the movement referred to in the Basic Six (or 10!) exercises (that is the reflexes that were precursors to gaining control over this movement) and (b) those reflexes that would have needed to be integrated in order to properly execute the exercise.

Figure 6: SUPPORTING BARTENIEFF FUNDAMENTALS WITH UNDERLYING REFLEXES
Focus on the Bartenieff Fundamentals Basic Six (or 10)
©Martha Eddy 1991/2011

Organized in Developmental Order as Identified in Dynamic Embodiment©
Core-Distal condensing and expanding exercises from BF and reflex support:
1) Ilio-femoral flexion (aka thigh lift) and pre-thigh lift
(a) flexor withdrawal, extensor thrust, crossed extension, negative stepping
(b) abdominal reflex* for clear core initiation
2) Body Half Condensing and Expanding
   (a) ATNR & Hand-to-Mouth*
   (b) Oral and Anal* rooting
   (c) Neck Mobility*
   (d) Abdominal Mobility* and Gallant (e) Mid-limb flexor withdrawal**
   (f) Flexor withdrawal
Symmetrical Push to Reach Limb Patterns (all reflexes needed for starting position)
2) Heel Rock
   (a) Flexor withdrawal
4) Sagittal pelvic shift
   (a) Symmetrical anal* rooting
   (b) Extensor thrust of the hips** (stimulus is simultaneously on each side of “lower six inches” – pelvic floor or external rotator region – first introduced by parent or self)
Right Left Body Half Coordination
5) Lateral Pelvic Shift
   (a) Anal rooting*, gallant
   (b) Extensor thrust of the hips**
Cross-lateral Coordination
6) Knee Drop/Reach
   (a) Tonic lumbar
   (b) Lumbar reach
(c) Flexor withdrawal, extensor thrust from the knee**
(d) Anal* rooting
(e) Gallant
(f) Oral rooting

7 & 8) Arm Circle and X-roll
(a) Abdominal and all spinal reflexes
(b) Tonic lumbar*
(c) Lumbar reach*
(d) Flexor withdrawal and extensor thrust of the feet
(e) Flexor withdrawal and extensor thrust of the hand**
(f) Babinski

Note: Preparation for all exercises that begin in "constructive rest" - the classic position of lying supine with lower extremities in weight bearing knees bent and feet on floor requires Activation of Tonic Labyrinthine in supine, protective extension of the legs, positive supporting of the legs, and symmetrical tonic neck reflex (STNR).

*Reflexes identified and Named by Bonnie Bainbridge Cohen (Sensing Feeling and Action)
**Movement coordination postulated by Martha Eddy (Past Beginnings 1991)

Contributions of Bartenieff Fundamentals to the Teaching of Body-Mind Centering
Bonnie Bainbridge Cohen (1993) credits Irmgard Bartenieff with having "stimulated in me unfathomable questions of how the body moves. These questions led me to an expanded view of how muscles work, the dynamics of flow and quality within movement, and the phenomenon of spatial tension and harmony." (p.158)

I was privy to seeing the influence of her 1975 studies with LMA as I began studying BMC with her in 1976. It is great to interact with these two systems. I have often referred to them as two sides of the same coin, or like glove and hand. One example of how they have “morphed” in response to each other is to observe the progression of little finger to scapula and thumb to coracoid process. Bainbridge Cohen expounded on a similar series of skeletal connections between the toes and pelvis. We worked together to connect the fingers to the ribs and I related the ribs to the face and neck.

There are dozens of ways that I use “Laban/Bartenieff Thinking,” to quote Bob Dunn, in how I teach BMC concepts. These mergers weave throughout my Dynamic Embodiment program. In this article it would seem remiss if I didn’t mention a few ways in which I use Bartenieff’s analysis in teaching within the BMC certification program (1984 – present).

I find that one of the most important carryovers from LMA into the curricular developments of BMC is the awareness and analysis of movement in the planes. This logic is deeply embedded in the Kestenberg Movement Profile. The BMC certification has always included references to the
planes, in part due to its deep investment in anatomy and kinesiology, which is typically taught with planar terminology. Bainbridge Cohen went on to also study Action Profiling and the Kestenberg Movement Profile. In the KMP movement through the planes reveals a core unfolding of development.

Concurrent with this period of time the BMC programs began to include a study of the reflexes as they relate to movement through the planes. This is an exciting process - to simply identify which plane a reflex occurs in and then see what other reflexes partner with it. You can see how this process informed the task of identifying the missing reflexes necessary for reflex integration. I spent much time coaching students to better understand the planes, practicing using spatial awareness in speaking about and performing within the planes, and in observing planar movement. At times it would be helpful to teach the scales or one or two of the Bartenieff exercises. There is also a recording from an early Body-Mind Centering Association conference in which I gave a lecture (with experiential moments) on the different uses of spatial analysis in these three systems of movement study.

Another interesting observation, is that the BMC “development sequences” (referred to as Series I and Series II) have no specific choreographed or simulated movement that represents navel radiation, while there is one for all the yield and push, and reach and pull patterns. Whenever I enter this territory of exploration, I return to BFs Folding and Unfolding, Xs and Os, that I most often refer to as “Condensing and Expanding in the Big X” to signify and reconnect to this in-utero stage. While these movements can be a time of feeling whole, feeling connected to breath, and differentiating body parts, it is also a great exercise for combining the planes systematically. In Dynamic Embodiment courses I teach how to use “Condensing and Expanding” diagnostically to identify planar preferences. This is another sensitivity that I bring back to the BMC community whenever possible.

Conclusion

I deeply believe that as educators it is important to understand when you are moving from which somatic system. Knowledge of the actual movements taught or guided by Bartenieff evoke a specific somatic experience; knowledge of the actual movement taught and guided explorations of Bainbridge Cohen elicits specific “body-mind states.” The ability to identify the source of a movement experience allows us to know where to go for more information. Taken a step further, being aware of the historical roots of an exploration helps us then access which logical frameworks to apply in that instance in our work as therapists, educators, and artists. Naming sources and history is empowering as it affords us the link to find out how to learn more about an approach. This type of empowerment is a
strong value, rooted in academic scholarship, and it is conveyed within DESMOTT. The playing field between somatic systems is huge. The work of Bartenieff and Bainbridge Cohen will continue to develop for decades to come through the students of their systems. Rapidly expanding neurological research in motor learning and development will catapult us further. Much of what has been known and practiced by somatic pioneers is being integrated into medical models Figure 7 is a chart that Rachelle Tsachor, CMA developed to organize the many developmental concepts she was learning as a CMA, worked with as an educator, and sharpened in post-certification training to become a Registered Somatic Movement practitioner. This type of cross-examination of three systems opens us to a world of exploration. It is a work in progress. I was delighted that she invited me to join in it. Please join us in this exploration. My current excitement is cataloging the role of the endocrine gland support (a BMC concept) in each of the Basic 6 (or 10!) exercises, with the DESMOTT community. I look forward to sharing these next developments too.

Further notes:

This developmental analysis process is ripe for correlation with the 3-D spiralric Proprioceptive NeuroMuscular Facilitation movements (PNF patterns) that each of these three programs teach to varying degrees.

References


Eddy, Martha. 2000 “Developing a Perceptual Motor Screen for Quantitative and Qualitative Assessment.” Currents Summer/Fall 1.4-23.


Florentine, Mary R. 1972. Normal and Abnormal Development: The Influence of Primitive Reflexes on Motor
Development Springfield, IL. Thomas.


Appendix 1
Overview of Laban Movement Studies System & Vocabulary

LMS identifies 4 major components of movement.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Observe</th>
<th>Can Express</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>8</td>
<td>Sensing</td>
</tr>
<tr>
<td></td>
<td>What is Moving</td>
<td></td>
</tr>
<tr>
<td>Effort</td>
<td></td>
<td>Feeling/Inner Drive</td>
</tr>
<tr>
<td></td>
<td>How it Moves</td>
<td></td>
</tr>
<tr>
<td>Space</td>
<td></td>
<td>Thinking</td>
</tr>
<tr>
<td></td>
<td>Where it Moves</td>
<td></td>
</tr>
<tr>
<td>Shape</td>
<td></td>
<td>Relationship/Intuition</td>
</tr>
<tr>
<td></td>
<td>Why it is Moving</td>
<td></td>
</tr>
</tbody>
</table>

LMS identifies four rhythms of change among the components and their elements:

<table>
<thead>
<tr>
<th>Exertion</th>
<th>Recuperation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility</td>
<td>Stability</td>
</tr>
<tr>
<td>Function</td>
<td>Expression</td>
</tr>
<tr>
<td>Inner</td>
<td>Outer</td>
</tr>
</tbody>
</table>

Body is taught through Bartenieff Fundamentals™ "a n o r g a n i z e d s y s t e m t h a t focuses on movement integration and harmony. When moving, our coordination is affected by body connections, center of weight and the relationship to initiation and follow through of a given action. In developing the principles of Fundamentals, Bartenieff was concerned with support of the body to facilitate functional and facilitate functional and efficient movement experiences."18

18. Laban/Bartenieff Institute of Movement Studies document outlining Bartenieff Fundamentals
Major Fundamental Principles

- Dynamic Alignment — a readiness to change and ability to form and maintain a constellation with body parts, referred to as “connectedness”
- Center of Weight — and its role in weight shifting, weight transference, level change, and propulsion
- Internal/Core Support — involving breath, organs, skeletal & muscular coordination and flow
- Gradated Rotation — using full ROM in global joints with core accommodation
- Initiation of Movement — what body parts leads (core, proximal, midlimb, distal) and Sequencing — follow through of initiation of a given action
- Breath Support — essential to proper use of internal support and efficient energy flow; sensing three-dimensionality
- Spatial Intent — interrelationship of body connectivity and spatial intent
- Effort Expressivity — interrelationship of body connectivity and Effort expression
- Developmental Patterns — a base for level change and motor development

Basic Connections or Coordination of Body Parts (including but not limited to):
  - Head / Tail
  - Heel / Sitz bones
  - Heel / Sacrum
  - Scapula / Hand
  - Scapula / Shoulder Rhythm
  - Pelvic / Femoral Rhythm
  - Upper / Lower (homologous and contralateral
  - Right / Left sides (bilateral and homolateral)

Developmental organization of motor patterns:
  - breath support
  - whole body
  - expanding/condensing (core/distal) spinal
  - upper-lower connections/homologous
  - body-half/homolateral
  - crosslateral

Pre-Fundamentals
  - weight sensing
  - heel rock
  - heel slides/pre-thigh lift
  - whole body opening and closing
Basic Six
Thigh Lift
Sagittal Pelvic Shift
Lateral Shift
Body Half Lateral
Diagonal Knee Drop
Arm Circles

Efforts
Efforts express the inner drive to move, the feeling creating the quality with which a movement is performed. There are 4 factors with 2 elements each.

Single Efforts

<table>
<thead>
<tr>
<th>Indulging</th>
<th>Fighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space Effort-Attending (focus)</td>
<td>direct</td>
</tr>
<tr>
<td>flexible/indirect</td>
<td>strong</td>
</tr>
<tr>
<td>Weight Effort-Intending (pressure)</td>
<td>sudden</td>
</tr>
<tr>
<td>light</td>
<td>bound</td>
</tr>
<tr>
<td>Time Effort-Deciding (immediacy)</td>
<td></td>
</tr>
<tr>
<td>sustain</td>
<td></td>
</tr>
<tr>
<td>Flow Effort-Progressing (control)</td>
<td></td>
</tr>
<tr>
<td>free</td>
<td></td>
</tr>
</tbody>
</table>

States--Two Efforts Combined:
Mobile: Time and Flow    Stabile: Space and Weight
Near/Rhythm: Time, Weight    Remote: Space and Flow
Dream: Flow and Weight    Awake: Space and Time

Drives--Three Efforts Combined:
Vision Drive-weightless    Spell Drive-timeless
Passion Drive-spaceless    Action Drives-neutral flow

45
**Shape (relationship)**

Shape change is a dynamic change in body shape expressive of relationship. It can be expressed in the full body or primarily in one area of the core (face, head, neck, shoulders, chest, back/abdomen, pelvis) or by a gesture (hand, arm, shoulder, legs, feet, eyes, mouth).

<table>
<thead>
<tr>
<th>Modes of Shape Change</th>
<th>Relationship</th>
<th>Mode/Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Still) Shape Forms</td>
<td>Container of self</td>
<td><img src="image" alt="Wall Ball Pin Screw" /></td>
</tr>
<tr>
<td>Shape Flow</td>
<td>to self</td>
<td><img src="image" alt="Growing Shrinking" /></td>
</tr>
<tr>
<td>Directional Movement (spoke/arc) 1-D, 2-D</td>
<td>Linking to environment</td>
<td><img src="image" alt="Spoking Arcing" /></td>
</tr>
<tr>
<td>Shaping (carving, molding) 3-D</td>
<td>Adapting/creating</td>
<td><img src="image" alt="Changing self in response to relationship" /></td>
</tr>
<tr>
<td>Shape Qualities</td>
<td></td>
<td><img src="image" alt="spreading" /></td>
</tr>
</tbody>
</table>

Shape change reflects a relationship—
to a person or to the environment. Shape expresses how one responds to one's surroundings: Do you want to connect with, or flee from, dominate or cower under?
### Space

<table>
<thead>
<tr>
<th>Key concepts</th>
<th>Description</th>
<th>Symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direction</strong></td>
<td>Judged from the mover: (e.g., forward, side across, diagonal back)</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td></td>
<td>Parts judged from point of attachment (leg forward means forward from hip)</td>
<td></td>
</tr>
<tr>
<td><strong>Level</strong></td>
<td>Raising or lowering of the mover (High is on balls of feet, low means bent legs)</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td></td>
<td>Raising or lowering of a part (as judged from place of attachment)</td>
<td></td>
</tr>
<tr>
<td><strong>Path</strong></td>
<td>Mover's path across the floor. (Cross from downstage left to upstage right)</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Facing</strong></td>
<td>Orientation to the room/environment (face upstage, then face stage right...)</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Kinesphere</strong></td>
<td>Personal Space (around each mover) (the space you use without locomoting)</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Reach Space</strong></td>
<td>Part of Kinesphere used for a phrase or gesture (near, mid-range or far)</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>CPT pathways</strong></td>
<td>Movements occur in the Kinesphere along pathways:</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>Central</td>
<td>towards or directly away from center on the kinesphere's periphery</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>Peripheral</td>
<td>inside the kinesphere</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>Transverse</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Trace forms</strong></td>
<td>Design made in space by a movement</td>
<td></td>
</tr>
<tr>
<td><strong>Spatial Pulls</strong></td>
<td>Sensitivity to differing qualities of moving through space: (How your body experiences physics: gravity, support angles, momentum, inertia, trajectory)</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Dimensions and crystalline forms</strong></td>
<td>How many different spatial pulls are present?</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>Defense scale</td>
<td>1-d = straight line: vertical, horizontal, sagittal</td>
<td></td>
</tr>
<tr>
<td>(octahedron)</td>
<td>2-d = plane: &quot;door, wheel, table&quot;</td>
<td></td>
</tr>
<tr>
<td>Cycling in Planes</td>
<td>3-d = movements that have height, width and depth</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>(icosahedron)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagonal Scale (cube)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>transverse, spiraling,</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Appendix 2: Developmental Progression of Body, Effort, Space and Shape
Work in progress by Rachelle Palnich Tschor, in consultation with Dr. Martha Eddy

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Body</th>
<th>Effort</th>
<th>Space</th>
<th>Shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 3 months</td>
<td>Stabilized senses, Weight Sensing, Breath flow, Flexion/extension, Core/Distal, Head/Tail Yielding, Acceptance of support, Oral horizontal rolling, Quality of touch</td>
<td>Flow is developmental task tension flow fluctuations pre-weight - release of weight into weight sensing (yielding) managing weight of head pre-space - KMF early channeling, mastering fiscal length, attending/erecting gaze</td>
<td>Inner Space</td>
<td>Shape Flow</td>
</tr>
<tr>
<td>New Themes: Flow, Inner Function (self regulation), Me/Not me Accept/reject, (Hackney p82)</td>
<td></td>
<td></td>
<td>Kinesphere: Near reach, Contained by caregivers</td>
<td>Convex/concave supported by tonic flexion and extension</td>
</tr>
<tr>
<td>3 – 12 months</td>
<td>Sensory learning continues, Head Movement mastered, Upper body organization, Support from surfaces on body surfaces leads to yield and push, to reach and pull, Head/Tail connections prime, Main locomotion: Rolling, creeping, crawling (upper/lower, body ½ cross lateral develop in horizontal plane with room as reference)</td>
<td>Space is developmental task: Gaze, focused attention, direct/indirect attention, Mastery over flow continues</td>
<td>Horizontal Plane</td>
<td>Spacing</td>
</tr>
<tr>
<td>New Themes: Space, Outer Expression, Mobility, Sense of self (Hackney p 85-86)</td>
<td></td>
<td></td>
<td>Exploration of spatial environment, objects</td>
<td>Developing relationships through reaching out</td>
</tr>
<tr>
<td>9 – 24 months</td>
<td>&quot;Here I am,&quot; Upper/lower Body 1/2 Lateral, lateral shift (exploration of cross lateral begins with any twist, in vertical plane with first steps), Climbing, Walking, Yield and push in vertical, Lower body strength</td>
<td>Weight is developmental task, Strength/lightness, Mastery of weight in space</td>
<td>Vertical Plane</td>
<td>Posture adaptations in support of reach</td>
</tr>
<tr>
<td>New Themes: Weight, Stability, Exertion</td>
<td></td>
<td></td>
<td>Up/down</td>
<td>Lengthening/Shortening</td>
</tr>
<tr>
<td>12 – 36 months</td>
<td>Sagittal Shift/Hip Flexion, Lower Body mastery (toilet), Cross Lateral Locomotion patterns in Time: Run, jump, balance, hop etc, Explores alternating developmental patterns</td>
<td>Time, Speed, acceleration/deceleration</td>
<td>Sagittal Plane</td>
<td>Advancing/Retreating</td>
</tr>
<tr>
<td>New Themes: Time, Mobility, Recuperation</td>
<td></td>
<td></td>
<td>Forward/backward, Surfaces of walls can contain Kinesphere, Exploration of paths</td>
<td>Gesture development?</td>
</tr>
<tr>
<td>3 – 7 years</td>
<td>Integrating developmental patterns</td>
<td>Integrating and Mastering Effort combinations: States and Action drives? Imaginary play Development of personal movement signature</td>
<td>3 Dimensional and cross-planar movement, transverse pathways</td>
<td>Posture/gesture merger? Understanding non verbal cues</td>
</tr>
<tr>
<td>New Themes: Exertion/Recuperation phrasing modulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Range</td>
<td>Body-Mind Centering^1</td>
<td>Bartenieff Body Organization</td>
<td>Bartenieff Activities^2</td>
<td>Underlying Supporting Reflex^3</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------</td>
<td>-----------------------------</td>
<td>------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Pre-natal &amp; Birth</td>
<td>Cellular Breathing</td>
<td></td>
<td></td>
<td>(autonomic nervous system balance)</td>
</tr>
<tr>
<td>Birth – 1 month</td>
<td>Naval Radiation (once referred to as Radial Symmetry)</td>
<td>Breathing Core-Distal</td>
<td>Breath Support</td>
<td>Tonic labyrinthine vestibular stimulation</td>
</tr>
<tr>
<td>1 – 3 months</td>
<td>Pre-Spinal Mouthing Use of some spinal push and reach patterns</td>
<td>Head/Tail</td>
<td>Distal initiation of head and tail; Core initiation: flexion-extension, lateral flexion, rotation</td>
<td>Oral Rooting Head Righting (asymmetrical tonic neck reflex-ATNR)</td>
</tr>
<tr>
<td>3 – 9 months</td>
<td>Complete head-tail; Homologous: Yield/push upper Yield/push lower Reach/pull upper Reach/pull lower Beginning homolateral and contralateral</td>
<td>Head/Tail (spinal twist prepares for crosslateral - diagonal rolling &amp; creep later); Upper-Lower Differentiation</td>
<td>Preparatory exercise for creeping to standing, condensing to sitting.</td>
<td>Righting Reaction head vertical in space (optical righting); Landau, STNR symmetrical limb differentiation</td>
</tr>
<tr>
<td>9 – 12 months</td>
<td>Homologous quadrupedal: Yield/push &amp; Reach/pull; Homolateral: 1 limb Yield/push – 1 upper Yield/push – 1 lower</td>
<td>Upper/lower Torso-limb relationships: Homolateral Diagonal in horizontal plane w/ creep to sit</td>
<td>Heel Rock, Sag. Pelvic Shift, lower unit seq., seesaw partners, creeping to standing (locomotion &amp;stable) sit to stand to walk; Body 1/2 lateral, stopping &amp; rolling, Lateral Pelvic Shift</td>
<td>Righting head-torsos align, dominant 10-12 propping reflex; ATNR and Hark-Mouth^6 Galant reflex</td>
</tr>
</tbody>
</table>