Editor's Note: *The December 2005 issue of* Structural Integration *contained three articles on "biodynamics" written by Rolfers. Subsequent to that, an exchange of Letters to the Editor appeared wherein it was clarified that the word "Biodynamic" is used in different contexts by Franklyn Sills (with whom many Rolfers have studied "Biodynamic Craniosacral Therapy"), by Jim Jealous, DO (who teaches osteopaths the "Biodynamic" model as it applies to Osteopathy in the Cranial Field), and by Dr. Erich Blechschmidt, an embryologist. As the term "biodynamics" is not service-marked, and as the paradigm is of interest to Rolfers,* Structural Integration *will continue to publish articles on the topic, but ask authors to identify the basis of their use of the term.*

The following article is derived from a keynote presentation Michael Shea, PhD. was to make at the Rolf Institute's Annual Meeting in September 2006. Shea's use of the word "biodynamic" derives from his doctoral work in somatic psychology.

What Does "Biodynamic" Mean?
Implications for Manual Therapists

By Michael Shea, Ph.D., Certified Advanced Rolfer

I want to reclaim the term "somatic" with our discussion today. Somatics comes from a rich philosophical tradition meaning the lived experience of the body. It has gradually fallen out of usage in the past decade and I believe the term biodynamic is replacing it as a descriptor for lived experience in the body and the therapeutic process that supports it. I would like to define the word "biodynamic" in its various uses. Then I would like to define the way the concept of biodynamics is used particularly in the context of embryology. Finally, I would like to define the way biodynamic is used to describe the therapeutic process in manual therapy in general. To do this I will need to form a bridge to regulation theory in pre- and perinatal psychology. This will include a specific look at how an infant regulates his brain, how an embryo regulates its growth and development, and the relationship between these two developmental periods. I will then conclude this discussion with the idea that biodynamic practice is a paradigm shift in the manual therapeutic arts and has applications in psychotherapy as well.

To start it is important to remember that cranial practitioners are not the only ones using the term biodynamic. When Franklyn Sill's first book *Craniosacral Biodynamics, Volume One* came out, he got a call from the European biodynamic psychology folks claiming turf from a unique type of body-centered therapy developed by pioneers in Europe. In my research, the Rudolf Steiner community also uses the term biodynamic to describe an ultra form of organic gardening and soil preparation. They reference the myths surrounding Demeter who was the female god of all earth and sea. Thus we could say that this is a proper course of inquiry because there is also a mythology associated with the word biodynamic and some tension from different communities who use it as a descriptor for their work. Of special note is the fact that the word is used in Osteopathy in the Cranial Field also in a spiritual context in the sense of related metaphors to the Breath of Life, the Master Mechanic, and other such terms. Dr. William G. Sutherland himself said that one could consider osteopathy and therefore the cranial concept to be religious

in nature. Osteopathy in some circles is considered to be a theology of the body in this light. You could look at the current discussion in the online Rolf Forum as a kind of Inquisition because, as they say, "the pen is mightier than the sword." Thus the term "biodynamic" has become loaded with therapeutic, psychological, religious and mythic overtones. In other words, it is a big story, a very big story.

So what is "biodynamic"? The word biodynamic, as near as I can gather from my personal study of the history of experimental biology and embryology in the late 19th and early 20th centuries, simply means wholeness. The question that many biologists spent nearly the whole of the last century exploring with their embryonic newts and salamanders was how wholeness is conserved through progressive stages of complexity in the form of an embryo up to an adult human or frog or chicken. The conclusion amongst many biologists was that it was through chemical reactions – and nowadays that means genetic. Anyway, from a theoretical biology and experimental embryology point of view, biodynamic means wholeness. It is the element of completeness that is seen in each stage of embryonic development. So it actually begins as a concept and an observation from experimental embryologists at the end of the 19th century. The central theoretical and intellectual inquiry of those early biologists was how the wholeness of the embryo was carried forward in successive stages of development.

Along came Dr. Erich Blechschmidt in the 1940s, who in his later writings suggested that the theoretical notion of wholeness was related to the submicroscopic organizing or ordered movements in the fluids of the embryo. He used the term "biodynamic" to describe the properties of the organizing movements. Dr.Blechschmidt, in the glossary of his first book in English, *The Beginnings of Human Life*, defined the word biodynamics as "a special category of vital phenomena." Then he said, "biodynamics implies biochemistry." That's it. Not much more explanation. So one has to look at his later writings, talk to his colleagues such as Dr. Raymond Gasser and try to tease out a greater meaning. Rather than use the word wholeness, he used the word "entirety." His writings in English imply that he observed submicroscopic movement in the fluids that generate, maintain and sustain (much like a catalyst) the fields of cellular activity in the embryo that metabolize the raw building materials of the embryo into the structure and function of the body. All of this goes on within the context of the form of an embryo – which is a water being that over time congeals into the structure and function of the fetus, infant, child and adult.

To understand and palpate wholeness as a movement is to understand and palpate wholeness as self-organizing. In other words, the movement is self-ordering as Blechschmidt said. To make a leap now, I would like to propose that the submicroscopic self-organizing movement in the fluids is the one called "primary respiration" by Sutherland (because to me it feels like a long slow subtle breath all around and inside my body). Furthermore, there is a matrix of form called the embryo in which the activity of primary respiration takes place. Form is the totality of all structure-function relationships in the embryo at any given time. Wholeness is thus a self-ordering movement and a three-dimensional form in the image of an embryo called primary respiration. It is rather hard

to wrap your neurons around this until you have a direct palpatory experience of it. It is non-linear.

Of course there are many movements and vectors in the fluids, but I am specifically referring to a slow one that Dr. Sutherland originally called the “long tide” or “primary respiration”. The discovery that Dr. Sutherland and his students made in the middle of the 20th century was that something subtle and very powerful was directing the healing process. He originally referred to it as the “breath of life.” It is what I am now calling wholeness, although some would call it love. He further observed that it was moving *in* the fluids but it was not *of* the body’s fluids. Primary respiration is a perceptual experience of living, moving wholeness, and perhaps the embryo is the image of love if I may be so poetic. Some others make distinctions about the perception of the breath of life and other descriptive language, images and metaphors all of which is part of the perceptual and palpatory experience of the whole. Images and metaphors are extremely useful in describing preverbal experience.

I personally have had a direct perception of this movement called primary respiration and can access it anytime, with or without a client. It is a perception of wholeness because of the sense of its totality and three-dimensionality out to the horizon and back. It is outside my body and it orients to fulcrums and axes inside my body. Where does it come from? I do not know. But I am able to sense it within moments of attending to it by evenly suspending my attention throughout my whole body, the total surface of my skin, and then all around me. But that is not enough because wholeness is a type of breathing, and it is a reciprocal type of breathing. My suspended attention moves back and forth in rhythmic phases of fifty seconds. Out for fifty and in for fifty, or up for fifty and down for fifty, and so forth. I am not attending to tissue but to the image of the contents and surroundings of my body being a fluid medium with multiple currents. It is so easy for students to sense this.

Therefore, I have concluded that wholeness is the movement of primary respiration perceived to be occurring in the total fluid medium of the body. It is coming from outside my body when I orient my head and neck to the horizon. It is coming from the earth when I lie supine on the ground, and, most interestingly, I can sense it between my heart and the heart of my spiritual teacher. I can sense it directing the session of work with clients and its relationship to the deep stillpoint that it dances with and trades places with during the treatment. This is of particular relevance to all of us as manual therapists because it is important to rest in the stillness frequently during any session of therapy.

The way in which the wholeness of the embryo is conserved during a lifetime of shape shifting called development and differentiation is through the 100-second cycle of primary respiration, or what is sometimes called “the long tide”, “the tide”, or “the primary respiratory impulse”. It is like the catalytic converter of the embryo for the enormous amount of work that the embryo does in its growth. Proportionally the embryo has a much larger basal metabolism than the adult body. It is working incredibly hard, and it is interesting to note that human embryos spontaneously abort more than the

embryos of any other species on the planet. Up to 60%-70% of all human embryos fail to make it to term. It is hard work being an embryo!

Saying wholeness is a movement is a pretty bold statement and requires perceptual verification by a trained practitioner. As Sutherland said, “this is not an idle dream” (or, as I would say it, “this is not a new age fantasy”). To review, the first principle of biodynamics is: *Wholeness is the movement of primary respiration and its perception as a therapeutic force in the fluids of the body*. I believe that this is what Dr.Blechschmidt meant by “the law of the continuity of individuality”.

So let me switch gears now a little bit. You don’t have to accept this business regarding how I am defining biodynamics, but hold it as a possibility because – as Dr. Ida Rolf was fond of saying – “you can’t get there from here” but we can at least try to have a basic understanding. The next edge we are exploring is to find a contemporary unifying theory to hold all of this information together. It is a theory that is inclusive of several domains of knowledge and research. Along comes Dr. Allan Schore, who has codified what is called “regulation theory” in infant brain development. He kind of holds the patent on the incredibly complex understanding of the orbitofrontal cortex of the brain. I will talk a little bit about this because it really is groundbreaking work. He points out that the fundamental developmental vector in the late fetal brain and the first two years after birth is the self-regulation of the emotions. It comes from an enormous body of research material in the attachment and bonding literature. It is now simply called “affective neuroscience”.

One of Dr. Schore’s principles is that the client-therapist relationship is a direct analog of the mother-infant relationship. Neuroscience now describes a process of resonance and attunement that occurs between the right hemispheres of the infant-caregiver dyad. It is the same process when any two people seek proximity to one another or withdraw from one another, and is especially enhanced in the therapeutic relationship involving manual therapy because of physical contact. Recent research has discovered a discrete set of nerve pathways from the skin that goes to a center in the right hemisphere that reads the context of the touch rather than the sensory component of it. This context center gets sensitized during infancy as to whether touch is nurturing and loving. That center can be damaged and thus the adult client may misread the contact unconsciously and disregulate the autonomic nervous system. The trauma resolution paradigm really speaks to this dilemma.

Recently, the term “neuroaffective touch” was coined by the Schore Study group at UCLA. It is a term that recognizes a degree of “palpatory literacy” of all the pre- and perinatal memories being held in the client’s body. It further implies that the physical contact with a client is gentle, subtle and synchronized with a slow tempo. I believe biodynamic craniosacral practitioners are using that quality of touch because of the influence on the community of (Somatic Experiencing founder) Peter Levine and the other folks doing trauma-resolution work. The reason this is important is because the infant’s entire organism, as well as its brain, develops best when it can synchronize with a slow endogenous tempo and be physically held and nurtured by a low-stress caregiver.

This is a biodynamic attachment between the infant and caregiver because it is so slow, warm and tender as much as it would be a “secure” attachment.

I have seen this over and over again and write about it in my forthcoming book *Biodynamic Craniosacral Therapy, Volume 1*. Most of my clinical experience over the past twenty-five years has been with infants and children. I have been doing Rolfing and cranial work with infants who have severe brain damage, all the way to infants with feeding problems or complications arising from c-section and vacuum extraction deliveries. Infants are always more responsive when someone in the room is actively engaged in the perception of primary respiration. I have verified this for myself by tracking all sorts of medial monitoring equipment when I work with medically fragile children. I can see all the parameters – such as blood pressure, heart rate, etc. – in the infant or child get lower when I am synchronized with primary respiration, and the positive affect that this has on the healing process is obvious.

Treating someone biodynamically also means that the practitioner needs to spend a majority of the time in a session sensing his own body and accessing a slow tempo. This allows for a biodynamic self-regulation to occur across nervous systems and fluid fields. This creates a resonance that down-regulates autonomic activation or withdrawal states in the client. Biodynamics in this sense is an attunement to these slow tides in myself first, recognizing the need to remain differentiated in the therapeutic relationship and then orienting to a slow tempo in the client. Imagine psychotherapists who are now being told to sense their own bodies to be more effective biodynamically with their clients. The basic idea here is that the client is trying to learn to self-regulate in two ways. The first is autonomously, or what is called a “top-down” ability of the executive control centers of the brain to consciously lower states of activation in the limbic system and body. The second is through relationship and the way in which I down-regulate states of activation when I am with another person non-violently or non-aggressively This corresponds to what Schore calls “experience-dependent maturation” from the caregiver’s brain, gesture and touch, eye gaze and sound to the infant’s sensory systems and brain. These are the two basic types of self-regulation and directly based on what Blechschmidt called an “outside-in influence” from fluids to cell membrane to cytoplasm to cell nucleus. The underlying metabolic and physiological processes can be described therefore as biodynamic. It is slow, purposeful and well-organized. I believe that the intention of many of the manual therapeutic arts has always been about creating autonomy for the client biodynamically. I now believe that the original term “somatic” could be renamed as biodynamic.

We have to move regulation theory, however, back to the embryo and pre-conception time of when the egg differentiated in the mother’s ovary and when it was an embryo inside the mother’s womb. There are many stages of egg development before fertilization by a sperm, so fertilization is just the next stage of development and not the beginning of life. The physics of the wholeness of the embryo is self-regulated through its form. Form involves the following description of fluid behavior: symmetry, polarity, morphology, fields of physical metabolism and tensegrity, character structure and constitution (heredity) and structure-function relationships. Form is defined as the totality of all

structures and functions in the embryo. Thus, we could say that an important law of biodynamic embryology is that the form of the embryo itself is a visible image of wholeness. In other words, the movement of primary respiration takes place within a fluid-form matrix and that it generates shapes and structures in the “mid tide” of the embryo as Franklyn Sills calls it. The mid tide is the total fluid medium of the body and the long tide is its brain, so to speak. This is the embryo. This is what I believe Sutherland referred to as the “blueprint” of form and function carried by primary respiration. A gene responsible for the form or shape we inhabit has not been discovered yet, and until then this is a plausible explanation because it is a perceptual experience more than a theory. This is a study of the physical laws effecting growth and development coming from “outside-in”, whether an embryo, an infant or an adult. The physics of it “implies” the biochemistry of the embryo. The biochemistry is enormous along with the genetics, but as Rolf implied with her life’s work, I cannot get my hands on the genes. I can, however, sense the shapes of the embryo in my adult clients. Hundreds and hundreds of clients report a deeper sensory experience or an image of wholeness from biodynamic craniosacral therapy, as well as from other modalities including Rolfing. The experience is reported with different language, images, and metaphors that are uniquely non-cognitive because regulation theory is about development that takes place in a pre-verbal state.

How does one describe the experience of sentient fluids congealing into a specific structure? We need a whole new language and metaphor other than sensation generated by soft tissue manipulation and traveling to the brain and back down. We need something more three-dimensional or perhaps four-dimensional and fluid. There is an enormous amount of metabolism that takes place prior to sensory neurons differentiating at twenty-eight days post-fertilization, and ample literature on the experiences of those first twenty-eight days from regression therapy and analytical therapy from as far back as the 1940s. That preverbal time has a homologous link to adult physiology but needs to be accessed differently by a therapist. Biodynamic describes the state of mind and body of the therapist. What he or she is accessing in the client is called biokinetics, the behavior of the fluids.

Biokinetics involves dynamic morphology, which describes the active shaping processes that occur during each week of embryonic development. Each week the embryo undergoes a different shaping process unique to that week. The purpose of the shaping is to orient the embryonic being to time and space, which are the precursors to a body’s orientation to gravity. For instance, this means that in the first week, its morphology has a symmetry that is very inward directed and thus a lot of compression occurs. The first orientation is coming “in” to form. The second week is very outward directed and thus a lot of decompression and tension. The second orientation is going “out” to make contact with the environment. Orientation is necessary for self-regulation at a metabolic level. The orienting embryo must build a membrane system to create a boundary around its fluids. The boundary has one layer that creates a metabolism of autonomy and another layer that is quite permeable and open to an exchange with the environment. This permeable layer is the metabolism of relationship. Remember, this is a shaping process and a growth process that is biodynamic as well as biochemical. Furthermore, it is free of

the influence of gravity and more under the influence of buoyancy or lift for the purpose of symmetrical orientation and metabolic self-regulation. The fluids of the embryo have discrete directions that they move in, such as along a longitudinal axis usually associated with a tissue boundary and perpendicular to that axis. Most manual therapy that only works with the effects of gravity is perinatal in its application in that those effects come on-line after birth. A biodynamic therapy takes into account the biodynamic formative forces more influential in the prenatal time of development.

In the beginning of the third week of embryonic development, the symmetry becomes oriented to the midline. With a midline the embryo can orient to the four directions of right and left and top and bottom; this is essential as embodiment begins to occur at this time. The future muscles and bones start to form. I would like to reinforce an important aspect of the midline, and that is that it is a distusion field. This means that the tissue itself is being pulled in opposite directions, and because of its position in the embryo, it is kinetically still. A lot of biodynamic work is about synchronizing with stillpoints, which gives you access to these embryonic fields (but not *all* the time – such as when encountering held inertia and the stillness that centers such trauma). Finally, during the fourth week to the end of the embryonic period, an orientation to having a middle – and thus a front and back – becomes possible. Of course there are numerous other overlapping metabolic processes happening, but orientation and self-regulation are the biodynamic ways that wholeness is conserved through very complex development. In a way you could say that Rolfing is related biodynamically because of its interest in establishing fascial symmetry around a midline. What is fascia? It is thick fluid. It has a dense gradient of viscosity to it. Imagine being able to access the less congealed state of the fascia. This is the embryo.

Then we have the business of metabolic fields, which is another aspect of biokinetics as mentioned earlier. Some students think that this was Dr. Blechschmidt's idea. But the notion of embryonic fields of increased fluid activity or "sub-wholes" in the embryo came into the scientific embryology literature in the 1920s. This is really the aspect of the work that is vitality important in the cranial field and manual therapy in general. The eight metabolic fields that Dr. Blechschmidt described are construction zones in the overall site plan (form) of the newly condensing human body. They are defined by their different positions, shapes, and interrelationships. They are definitely something we can get our hands on, because Sutherland discovered their homologue in the adult body. Specifically, these movements are described as flexion-extension, compression-tension, sidebending-rotation, torsion-shearing, inferior-superior vertical strains, etc. When a practitioner slows his own tempo down and self-regulates biodynamically, these biokinetic fields actually appear as specific shapes in the practitioners hands; this is done while simultaneously maintaining a wide perceptual attention within the context of the total fluid system of the body, rather than specific condensations like the cranial base as is traditionally taught. These fields have zones of activity called polarities.

Polarity is defined two ways. First, polarity is sensed as different gradients of density and temperatures of the fluids along or perpendicular to a membrane axis. Secondly, the most important polarity begins at the end of the first week, when the first stem cell lines

become apparent. The embryo divides into two separate bodies. Dr. van der Wal calls these the “central body” of the embryo (which ultimately becomes the body) and the “peripheral body” (which ultimately becomes the placenta). This type of polarity is more like a bifurcation of the form of the embryo itself into two wholes that are mirroring one another with different chemical metabolism. There is a certain elegance here, because the central body projects function to the peripheral body biodynamically. In other words, the outer layer of cells, in contact with the uterine environment, contains liver enzymes and hormones being produced by the peripheral body and all sorts of interesting movements, areas of stillness and specialized cells on its inner lining. This is the metabolism of relationship, because the peripheral body is in contact with the uterine environment with its outer layer of cells. The central body has no specific structure called a “liver” or “glandular tissue”. It prefers its autonomy for as long as it can. The communication between the two bodies is through the fluids biodynamically with the intention of being blood to blood. The mother’s blood is being invited to connect to the embryo’s blood that is already being produced in the second week. Blood attracts blood, so to speak. The central body is autonomous and early on is not even directly connected to the periphery by tissue – only by the biodynamic movements in the fluids between them.

The process of projecting function by the metabolism of the central or autonomous body to the periphery (until the structure arises internally) becomes a physiological process in the fetus and infant. This means that the infant manages his autonomic nervous system by projecting it to the mother and consequently having it reflected back in a settled state (ideally). Finally, the function of projection becomes psychological in the adult. The strong emotions that I can’t handle get projected on to other people around me until I can re-own them with the proper psychospiritual structure for such. Thus, it is natural for clients to project function onto the therapist, and we help build the structure in their bodies for it to be reclaimed biodynamically. The principle here is that the therapist simply must stay in contact with his sensory body in a slow tempo. His brain is unconsciously creating the client as a neural network in his brain and body just like a mother does with her baby and just like the baby does with the mother. It is a two-way street, whether you are in an infant/mother dyad or a client/therapist dyad. So we do get visitations from time to time in our bodies from the client. It is quite real and at times not so subtle. The client must be able to resonate with a slow tempo in the therapist unconsciously to self-regulate the relationship.

If a theory is a good one it will include the spiritual, as the theories of Dr. A. T. Still and Sutherland did. In this case there are two theologies in the Judeo-Christian world. One is the theology of transcendence, where one projects divinity as something way beyond the horizon of the mind and body to comprehend. The other is the theology of immanence, in which the divine is immediately accessible in the body and in the here and now. I believe this starts with the metabolic function of the embryo having a center and a periphery. The function of projecting to the periphery is maintained spiritually as well, and the connecting link is primary respiration – in the sense that the transcendent and the immanent breathe together and are not mutually exclusive. This is the great work of mysticism, Jungian analysis and countless ecstatic traditions. Please don’t think I’m

making a case for biodynamic mysticism. I am not. The case here is for understanding the notion of center and periphery and its role in the therapeutic process. It is huge.

Finally, I have one last note on the elements of biodynamics. Structure-function relationships are quite active at all times in the body from the first differentiation of an egg cell to the moment of death. I have heard it called “structuring”, which describes the structure-function relationship as a unitary metabolic process that is a constant with living bodies. A structure is not a static thing. It is very active. This brings up a particular principle in that all adult function is pre-exercised in the human embryo. For example, Blechschmidt said that the newly fertilized zygote starts moving with a reciprocal movement in its fluids. He originally called this a “suction field” and said that this was the pre-exercising of the respiratory function. The respiratory function is the oldest function in the organism and is a high priority to assess therapeutically in biodynamic craniosacral therapy and a first hour of Rolfing. In my Rolf training in 1980 it was stressed that Dr. Rolf said the all change process needed to be supported by an increase in respiratory capacity. The point here is that, embryologically, function precedes structure; but, to avoid this chicken-or-egg argument, a practitioner must be able to palpate, unobtrusively at first, a functioning structure that is constantly shaping and reshaping itself, and to do so requires biodynamic skills as outlined here. The same pre-exercising can be said then for endocrine function, autonomic nervous system function, cardiovascular function and so forth. All of this function is grounded in a slow developmental tempo with stillpoints all around it.

In this light, it is possible to understand that the study of a biodynamic embryology is important to manual therapy and especially craniosacral therapy. The embryo is a living whole. It has a form. This living form is the image of wholeness and can be palpated in an adult or a child. Practitioners can synchronize their attention with it and support and augment the healing process of biodynamic self-regulation. All of this is accessible if the practitioner is working at a slow tempo and has a personal relationship with primary respiration. This is the meaning of biodynamic. It is much deeper than the embryo itself in my understanding. It is first and foremost based on the perceptual and palpatory experience of the practitioner. It describes a unique therapeutic approach to supporting self-regulation of the client from its origins in the prenatal period of life through the lens of the practitioner’s perception of a variety of events occurring in the fluids of the body.

The whole process of biodynamic work becomes deeply instinctual and less mechanical. By “less mechanical”, I mean *less* cognitive and *less* intuitive. The mind has less movement and the biodynamic tempo in the fluids becomes the priority, because that is the way it was in the beginning. The biodynamic process then reveals the biokinetic and morphological processes, which then reveal the biomechanical and physiological processes – rather than the other way around. This developmental sequence is honored. By way of closing, I would like to say that an important way to discover this biodynamic wholeness is resting into one’s body, orienting to the embryonic forces, and sitting still while observing the great metaphorical sea around us.

Michael Shea's education includes thirty years of studying the cranial concept with numerous teachers and cranial osteopaths. He was one of the Upledger Institute's first certified Full Instructors in 1986, and he has co-taught with Franklyn Sills in Great Britain and completed a three-year program in Prenatal and Birth Process Therapy with Dr. Ray Castellino. He is the author of several books on the subject of somatic psychology and his forthcoming book: Biodynamic Craniosacral Therapy, Volume 1 *will be available from North Atlantic Books in February 2007. He is adjunct faculty at the Santa Barbara Graduate Institute where he teaches embryology to the doctoral students. He specializes in working with infants and children with neurological and developmental delays.*