Biodynamic and Biomechanical cranial approaches compared

Same action, different interpretation of effect

An example of something unconnected to cranial work may help in understanding how identical (apparently) actions in cranial manipulation might be interpreted quite differently.

A Western trained manual therapist or practitioner, when compressing tense, tight soft tissues, using thumb pressure for example, might be aware that a number of predictable, and easily explained simultaneous effects are taking place.

Digital pressure obviously produces mechanical stretching of connective tissue, influencing the viscoelastic (sol/gel) properties of tissue (Barnes 1997), it also stimulates mechanoreceptors, so influencing pain perception (Ward 1997, Melzack & Wall 1988), and of course it will temporarily produce increased ischemia, so that on release of the pressure a flushing of fresh oxygenated blood occurs (Travell, Simons & Travell 1999). Applied pressure also triggers the release of pain relieving endorphins and enkephalins (Baldry 1993).

A simple biomechanical action can therefore be seen to produce obvious mechanical stretching effects alongside neurological, circulatory and endocrine ones.

Now the very same pressure, applied by someone trained in the Eastern traditions of Ayurveda or Traditional Chinese Medicine (Shia tsu), might be conceptualised as altering the flow of prana or chi – with an energy related outcome on health. Which practitioner is correct? Possibly both.

In cranial work it is also possible to see that performing the same activity, say for example 4th ventricular compression, might be having a predictable biomechanical influence by causing a degree of slack in the reciprocal tension membranes that attach to the inner aspect of the skull, potentially influencing venous sinus drainage.

Or, if a practitioner's understanding of the cranial approach is biodynamic, rather than biomechanical, this same cranial hold might be conceived to be having a transmutational, fluid driven effect, on the healing processes of the body.

Some remarkable images, are to be found in a chapter of Cranial manipulation Theory and Practice by John McPartland DO (2nd edition, due for publication late in 2005). These illustrate some basic concepts of

biodynamic cranial theory, and suggest that the embryo is a biodynamic archetype, serving as a blueprint for the body's ability to heal itself, so that the formative, resorbative, and regenerative fluid forces that organize embryological development may also be present throughout life.
Byodynamic cranial practitioners postulate that external forces generate a spatial orientation in the embryo. This becomes expressed in the material plane by fluid forces, perhaps by electro-magnetic water hydrogen bonds generating a matrix that governs the embryo's development.

The tensile fluid forces required for this process were demonstrated by Schwenk in 1996, who used micropipettes to inject streams of fluids into water. Boundary surfaces arising between the moving fluid and the still water vortexed into organic forms.

By changing the fluid density, or the injection speed, different forms were created. In some experiments, the tensile quality of the fluid matrix produced shapes that closely resemble the migratory path of neural crest cells in the embryo.
In other experiments the spatial orientations of fluid-in-a-fluid suggested central nervous system formation in the embryo, complete with dura and pia, cerebral hemispheres, and a corpus callosum connected to the hemispheres.
These concepts will be more fully explained and explored in the book

Biodynamic cranial practitioners correlate these concepts with Sutherland's description of *the Tide* acting as a fluid within a fluid, expressing a tensile quality, with the ability to direct force.
More recently the reaction of genes to hydrostatic pressure during embryogenesis has been termed "the morphogenetic mechanism" (Van Essen 1997).
Van der Wal (1997) likened genes to the clay that forms a piece of pottery. Clay by itself cannot form into shape, it requires the hands of the artist. And the hands of the artist cannot act without the mind of the artist. From a Biodynamic perspective, clay represents the genes, the hands represents the fluid forces, and the artist's/therapists mind represents the expression of those forces.
The therapist/practitioner working with the biodynamic model will be attempting to influence these fluid forces, possibly by means of a process of entrainment.

Biomechanical cranial therapy

Biomechanical cranial approaches regard the structures and functions of the cranial mechanism in a quite different way, with focus more toward evaluating structural relationships and their functional influences, including venous and lymphatic drainage, the rhythmic cranial pulsations, and dysfunction involving sutural articulations and fascial status, as well as the muscular attachments to the cranium, and the relationship between the cranium and the cervical spine.

A model that both groups accept

In recent years both schools of cranial therapy have shown particular interest in autonomic function, as represented by the Traube-Hering-Meyer oscillations.

These oscillations occur between 6 and 10 times per minute and are variously associated with BPº, heart rate, cardiac contractility, pulmonary blood flow, cerebral blood flow, movement of cerebrospinal fluid, and peripheral blood, including venous volume and body thermal regulation.

Nelson et al (2002) relate Traube-Hering-Meyer wave frequencies to palpatory cranial rhythmic impulse findings.

They have published recordings of the specific effect on the Traube-Hering-Meyer oscillations of **10 to 15** minutes of cranial treatment, showing Laser Doppler blood flow velocity records before and after cranial treatment in two healthy asymptomatic individuals. The records represent +_ 3 minutes of continuous, unedited recording, made within 20 minutes of each other and demonstrate the effect on autonomic balance of the treatment.

Individual no. 1 was a 55-year-old male who receved attention to cranio-cervical junction and cranial treatment, ±10 minutes.

Individual no. 2 was a 25-year-old female, in whom equilibration of the cranio-cervical juncture and cranial base was achieved in ±15 minutes of treatment

The high frequency waveform observed in all four recordings shows the blood velocity variation with cardiac systole and diastole (THM). A prominent, lower frequency oscillation, absent in both pre-treatment records but seen to be prominently present in both post-treatment records, is the TH wave.

It is quite possible that cranial treatment, even when it is focussing on biomechanical structures, may be having a direct influence on these rhythms, and so on both autonomic balance and the subtle fluid dynamics suggested by Biodynamic theory.

The choice of any treatment approach depends on accurate assessment findings and the interpretations given to these, and on the belief system and training of the practitioner.
There are probably no right and wrong choices when considering these two models of cranial treatment – merely different ways of achieving similar outcomes. And there is no reason why both Biodynamic and Biomechanical approaches should not both be available to the skilled practitioner/therapist.

References

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