THE LIVING MATRIX
A MODEL OF PRIMARY RESPIRATION

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PRIMARY RESPIRATORY MECHANISM

According to William Garner Sutherland, DO

1. Inherent motility of the central nervous system.
2. Fluctuation of the cerebrospinal fluid.
3. Mobility of the cranial bones.
4. Mobility and integrating function of the reciprocal tension membranes (cranial and spinal dura mater).
5. Mobility of the sacrum between the ilia.
PRIMARY RESPIRATORY MECHANISM

Additional phenomenon

6. These effects throughout the body.
PRIMAR Y RESPIRATORY MECHANISM

• Explanation of motion has been a mystery.
• Motion without apparent cause.
• Sutherland indicated that the cause was unknown.
Model Attempts to Explain Mystery

- Model based on several factors:
  - Literature
    - Scientific papers support hypothesis.
    - Writings of Still and Sutherland.
  - Clinical experience
    - Repetition of phenomena with many patients provides evidence to support hypothesis.
  - Contemplation
    - After the example of Still and Sutherland.
Model

• Based on literature:
  – Cellular physiology
  – Nature of water
  – Modern physics
  – Writings of Still and Sutherland
The Model of PRM from Cellular Physiology

- Pischinger
- Gabaral and Roques
- Nordenstrom
- Traube, Hering, and Mayer
- Vern
- Biswal
- Wang, Butler, Ingber
Osteopathic Literature

- Still
- Sutherland
- Littlejohn
- Swedenborg
William G. Sutherland, DO, DSci (Hon)

• Inherent motion generates from the “breath of life.”
• “God...breathed into his nostrils the breath of life; and man became a living soul.”
• For Sutherland, this idea was merely an extension of the ideas he learned from Dr Still.
By some reports, Littlejohn taught Sutherland and his classmates that the

- *life force* is behind physiological activities and that the

- *brain has inherent motion.*
THE LIFE FORCE

“When matter passes beyond the degree of being atomized farther, then it is life.”

“When matter ceases to be divisible, it then becomes a fluid of life.”

“Life is a substance which fills the space of the whole universe.”
Modern Physics

• Elementary particles wink on and off from a background of dark matter and dark energy which makes up the vast majority of universe.

• Here is where we observe the exchange between matter and energy, or material substance and the life force.

\[ E = mc^2 \]
Andrew Taylor Still, MD, DO

VITALISM

“Life surely is a very finely prepared substance, which is the all-moving force of Nature...from worlds to atoms.”
MIND IS PREEMINENT

“First, there is the material body; second, the spiritual being; third, a being of mind which is far superior to all vital motions and material forms, whose duty is to wisely manage this great engine of life.”

\[ E = m \times c^2 \]

motion matter mind
(spirit) (material) (life) (substance) (vitality) (form)
Modern Physics

- According to the double slit experiment, the mind of the observer influences the results of the experiment.
- This is evidence that the human mind creates its own reality.
David Bohm, PhD
Physicist

Meaning links mind and matter like opposite sides of a coin.

(Bohm, *Brain/Mind Bulletin*, 10:10, 1985.)
Masaru Emoto
Mind influences the structure of water crystals.

Mother Teresa

Adolph Hitler
Structured Water
Carries Information
Morphogenetic fields

• Energetic templates for living structures.

• Fields are not characterized by time/space.

• Yet fields effect form within time/space.
Morphogenetic Fields

• Download information to suitable structures.
• Pischinger states that ideal structures to receive information from fields might be characterized by:
  – Piezoelectricity
  – Semi-conduction
  – Watery medium
• Connective tissue meets these criteria.
Piezoelectricity

**DEFINITION:** transduces electric and mechanical energies.

- Collagen, ground substance, and other protein molecules are piezoelectric.
Semi-Conduction

- Protein and other molecules share their electrons.
- Quality of fascia.
- Veritable electric current flows along surfaces of fascia.
- The more electrons, the more alkaline and healthier the tissue.

Albert Szent-Gyorgyi
Water

- Facilitates ionic charge to flow to counter the flow of charge in the fibrous extracellular matrix.
• Collections of divalent cations (Ca$^{++}$, Mg$^{++}$) in the extracellular matrix, which create electric potential between the capillaries and parenchymal cells.
Electric Potential

- Nordenstrom measured these potentials using microelectrodes and invariably found them to oscillate at rates consistent with PRM.

Electrical potentials from the gastric and hepatic parenchyma of a 24 kg dog...

(a) Rhythmic fluctuations of potential from the liver. Their frequency is similar but their amplitude lower and of a slightly different pattern than that of the stomach. These rhythmic fluctuations are independent of respiration and of cardiac electrical activity. The maxima of the fluctuations of potential of the liver and the stomach varied from (a) out of phase to (b) almost in phase. Low or high amplitudes of the fluctuations of gastric potential were not accompanied by corresponding changes of amplitude in fluctuations of hepatic potential. Rhythmic fluctuations of hepatic potential have not been previously described.
• Calcium wave proceeds from capillary to parenchymal cell.
• Creates a phase change of the extracellular matrix liberating water bound to ground substance.
• Free water carries nutrients to cells.
Integrins

- Cell membrane receptors that stimulate intracellular change with extracellular stimulus.
- Calcium ion docking on extracellular site triggers intracellular actin filament contraction.
Mechanotransduction

- Wang, Butler and Ingber devised ingenious experiment to show how extracellular influence created intracellular effect.
- Magnets attached to integrins.
- Distortion of magnets distorted cytoskeleton.
Enzyme Activation
Donald Ingber, MD, PhD

• Distortion of cytoskeleton approximates enzymes that are fixed to the microtubules and microfilaments.
• This initiates metabolism.
Change in Cell Volume with Stimulation of Metabolism

• Biswal discovered that increased levels of metabolic activity are associated with increased cell volume of the cerebral cortex.
• Vern discovered that natural metabolic activity of the brain occurs in cycles, the rates of which are consistent with the PRM.
• Various researchers have found that glycolysis occurs in cycles.
CSF to Periphery

- Perineurium is continuous with the subarachnoid space.
- Perineural sheath has higher fluid pressure than the surrounding connective tissue, according to Gray’s Anatomy.
- Steer and Horney (1968) found blue particles injected in the subarachnoid space appeared in the periphery, but not distal to a ligature around a sciatic nerve.
Autonomic NS

• Traube, Hering and Mayer found an oscillation in the pulse pressure at a rate consistent with the PRM.

• This oscillation has been attributed (Guyton) to a searching-about-a-mean of the autonomic nervous system.

• Nelson, Glonek and Sergueff have performed some important research elucidating this effect and its relationship to PRM.
William Harvey

Challenged the common belief of his day that an ebb and flow mechanism delivered the nutrients from the blood to the cells; he said that the blood circulates one way through the vasculature, pumped by the heart.

William Sutherland

Challenged the common belief of his day that chaotic and uncertain diffusion delivers nutrients from the capillaries to the cells; he said that an efficient and certain ebb and flow delivers nutrients to the cells, generated from the life force.
• Circulation and oscillation are both required to refresh the needs of the material form.
• One day Dr Sutherland will be given equal stature with Harvey in the annals of physiology.
Summary

• Resumption of the original conformation (healing) is a return to the shape generated from the creative impulse (Mind).

• The fluids of the body transport this information (Health) from Mind.

• Distorted tissues impede this fluid impulse.

• Osteopathic manipulation effects healing.

• Cranial manipulation utilizes inherent forces.