

Triune Autonomic Nervous System: *Experimental Applications based on Craniosacral Therapy*

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Cranial Osteopathy Pioneers



William Sutherland
1873-1954



Randolph Stone
1890-1981



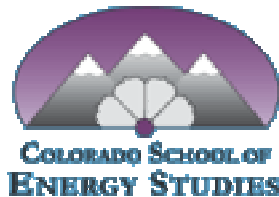
Rollin Becker
1918-1994



Robert Fulford
1907-1998

“My patients are happy, and my colleagues think I’m nuts.”
–Becker

The origin of Cranial Osteopathy is generally attributed to Sutherland, who detected subtle micro-movements in the bones, membranes and fluids of his patients. His experiments with this phenomenon yielded excellent therapeutic benefits, but generally his work was not embraced by his colleagues though some osteopaths did pursue the topic and continue to develop its theories and methods. Beginning in the 1970s, other health care professionals became interested in the concepts, under the term Craniosacral Therapy.



Basic Principles of Sutherland's Cranial Osteopathy

- “Original Health” is always present and palpable as a cyclic longitudinal “tidal” movement in the midline of the body.
- Subsurface tissues can be “palpated,” BUT it’s a hard-to-learn skill comparable to “remote viewing.”
- If you can accurately palpate anatomy, it may express itself through sensation, movement and other phenomena. This expression may constitute self-corrective processing, creating healing from the inside out.
- Encountering an anatomical expression, the practitioner supports movement in the direction of ease, rather than pushing towards a hypothetical symmetry or ideal state.
- The client’s system knows the pathway back to health: “inherent treatment plan.” Practitioner is a witness more than a fixer.



“Remote Viewing” Anatomy Comments

Description of the technique is rather difficult to put into words... To learn to feel function, to think function and to know function within anatomical physiology, is not an easy art and skill for the physician to develop. It takes hours, days, weeks and years to bring this training into the hands, eyes, ears and minds of the physician... One of the fundamental keys to diagnosis and technique is the ability to get within the cranium mentally and visualize all the activities going on.

–William Sutherland, DO, Contributions of Thought, p. v., p. 45.

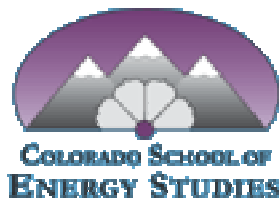
*What the doctor's mind
cannot conceive,
That he cannot relieve.*
–Randolph Stone, DO,
Polarity Therapy Vol. II, Book
5, p. 87

I realized I would have to develop a type of palpatory skill whereby I could hear what the body physiology had to say, instead of me telling it what to do... It is a form of palpation that one might call an alert observation type of awareness for the functions and dysfunctions from within the patient, utilizing the motive energy deep within the tissues themselves... The patient is guessing as to a diagnosis, the doctor is scientifically guessing as to a diagnosis, while the patient's body knows the problem and is manifesting it through the tissues.

–Rollin Becker, DO, Life In Motion, p. 142

[This work] enables the transfer of therapeutic information from the therapist to the patient with no other tool than human thought. Derived from Osteopathic principles, it is based on the ability of the operator to visualize his patient's organs and tissues as a three dimensional fabric. To achieve this ability, the operator must learn how to fuse his senses of touch and vision into one sense. With experience, the operator can create “palpable images” of the organs or tissues he wishes to treat. Pathology is felt as irregularities in the “fabric” occupied by the “patient.” Treatment consists of an unwinding, a loosening or a tensing up of the knots or nodes felt by the operator. The operator learns how to feel the patient with his total self, not just with his hands.”

–Michel Abehsara, DO, www.connective.org



Why was Sutherland not more accepted?

Becker: “Why do we struggle so in getting Will’s ideas across?”

- Too hard to learn?
- Takes too much time with each patient?
- Results defy explanation with conventional allopathic assumptions?
- Results lack predictability?
- Too many subjective factors for research?
- Too esoteric?
- Paradigm problem: healing comes from within!



Early Success in Search for Autonomic NS “Portals” (Stone, 1948)

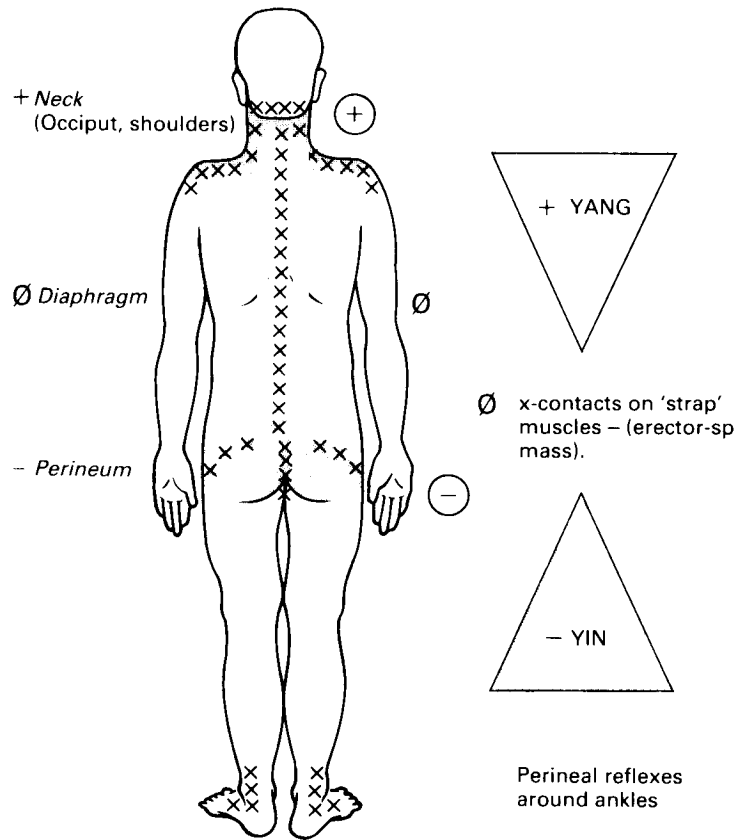


Fig. 7.3. Parasympathetic contact areas

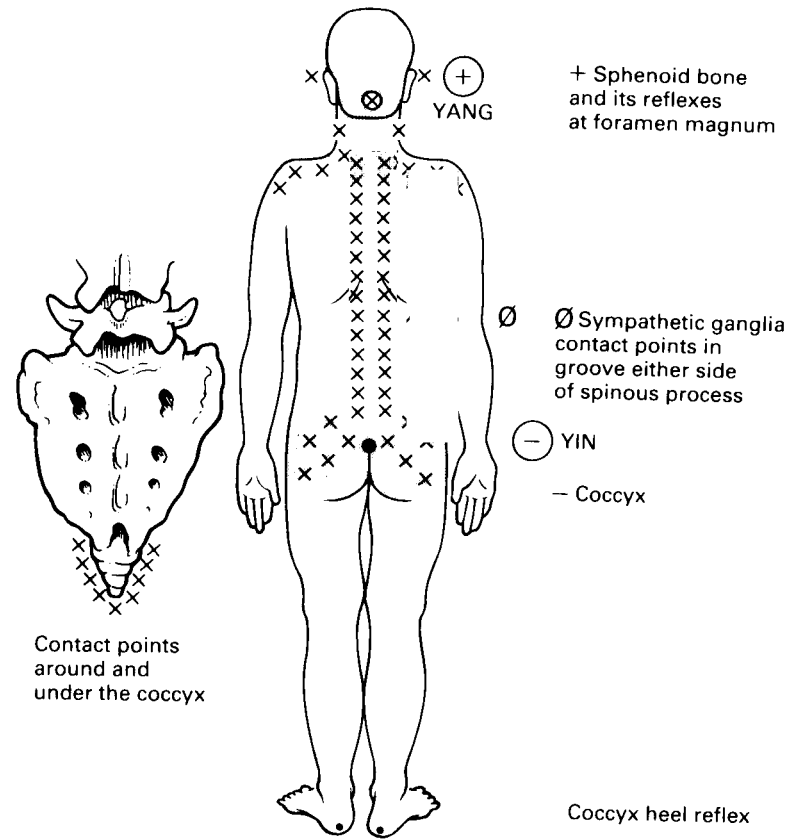


Fig. 7.4. Sympathetic contact areas



Art adapted from Sills, Polarity Process

Stephen Porges, Originator of the Polyvagal Theory

The Poly-Vagal Theory

The Poly-Vagal Theory is based on several premises. Some are firmly grounded in neurophysiological and neuroanatomical data and others are more speculative. The first premise articulates the neural regulation of bradycardia and RSA. Based upon the initial premise, it is hypothesized that the neurogenic bradycardia associated with the orienting reflex are mediated by DMNX and that the suppression of heart rate variability (i.e., reduced amplitude of RSA) is mediated by NA.

Premise 1: Neurogenic not respond in concert.

Physiological support independent of NA, is chronic bilateral lesion bradycardia in conscious with a response latency McCabe, & Schneider in rabbits, following possibility that vagal heart rate.

During the past three years testing a new biologically-based social interaction and communication intervention to children between We have tested more than 6 design. Most children experience communication skills immediately when assessed during a three minute sessions. We believe children diagnosed with autism listening, communicating and

Web search tips

Key words: Stephen Porges, Polyvagal, Trauma Pages, Autism

Complete Porges biography & bibliography:
<http://www.psych.uic.edu/faculty/porges.htm>



The Listening Project
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Emotion: An Evolutionary By-Product of the Neural Regulation of the Autonomic Nervous System^a

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A new theory, the polyvagal theory of emotion, is presented which links the evolution of the autonomic nervous system to affective experience, emotional expression, vocal communication, and contingent social behavior. The polyvagal theory is derived from the well-documented phylogenetic shift in the neural regulation of the autonomic nervous system that expands the capacity of the organism to control metabolic output. The theory emphasizes the phylogenetic dependence of the structure and function of the vagus, the primary nerve of the parasympathetic nervous system. Three phylogenetic stages of neural development are described. The first stage is characterized by a primitive unmyelinated vegetative vagal system that fosters digestion and responds to novelty or threat by reducing cardiac output to protect metabolic resources. Behaviorally, this first stage is associated with immobilization behaviors. The second stage is characterized by a spinal sympathetic nervous system that can increase metabolic output and inhibit the primitive vagal system's influence on the gut to foster mobilization behaviors necessary for "fight or flight." The third stage, which is unique to mammals, is characterized by a myelinated vagal system that can rapidly regulate cardiac output to foster engagement and disengagement with the environment. The myelinated vagus originates in a brainstem area that evolved from the primitive gill arches and in mammals controls facial expression, sucking, swallowing, breathing, and vocalization. It is hypothesized that the mammalian vagal system fosters early

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Chicago



PORGES: EMOTION

emotions, which in turn may determine proximity, social communication. The polyvagal construct has been previously the neurophysiological and neuroanatomical distinction branches and to propose their unique relation with behavior elaborates on the polyvagal construct and proposes that affective of the evolutionary process that produced the polyvagal

There is a consensus that affect is expressed in fact regulated by the autonomic nervous system. However, work by Cannon,^{2,3} which focused on the sympathetic-adrenal system substrate of emotion, the presumed neural regulation of affect investigated. Even contemporary researchers investigating autonomic nervous system⁴⁻⁷ have tacitly accepted Cannon's reflect responses of the sympathetic nervous system.

Unlike the architectural dictum that form (i.e., structure) *function of the nervous system is derivative of structure*. The of autonomic nervous system function is totally dependent mapping the phylogenetic development of the structures relation, it is possible to observe the dependence of autonomic function of the underlying structure of the nervous system. The phylogeny lights a shift in brainstem and cranial nerve morphology and sensitive system (i.e. the primitive gill arches) to a system muscles, cardiac output, and the vocal apparatus for affect

CANNON'S BLUNDER

Cannon emphasized the idea that emotions were experienced as adrenal excitation. In limiting emotional experiences solely to responses associated with sympathetic-adrenal activity, Cannon

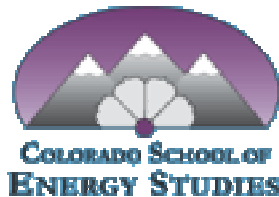
Triune Autonomic NS Summary

For a text overview of Polyvagal Theory, go to http://www.energyschool.com/writings/triune_autonomic_article.PDF

Phylogenetic Sequence & Autonomic Layer	Function	Anatomy & “Portal”	Experimental Hand Position & Visualization	Client Participation
1 Parasympathetic	Basic supply of nutrient & oxygen- rich blood to brain	Torso, Vagus N.	Index finger at Vagus N., view path and torso as one unit of function	Track sensations of “Belly Breathing”
2 Sympathetic	Mobility for “4 F’s” & more sophisticated survival strategies	Sympathetic chain, five appendages	Index finger at superior cervical ganglion, view path down to coccyx, up to pineal gland	Flex arm and leg muscles, track subsequent sensation
3 Social	Bonding to secure extended development time for cerebral cortex	Pharyngeal arches (CNs V, VII, IX, X, XI), corticobulbar tract	Embryological pharyngeal arches, Temporal bone (petrous portion),	Visualize “easy acceptance childhood resource,” track subsequent sensation
Amygdala	Sorts experience to identify threat based on early imprinting	Bilateral, 1” deep at temples, at anterior of lateral ventricles	Light contact at temple, palm above ear to palpate the 3rd ventricle	Visualize amygdala with feather-light tickle-pull, anteriorly

“At least 80% of all conditions that people see doctors for, revolve around the autonomic nervous system.”

–James Jealous, DO

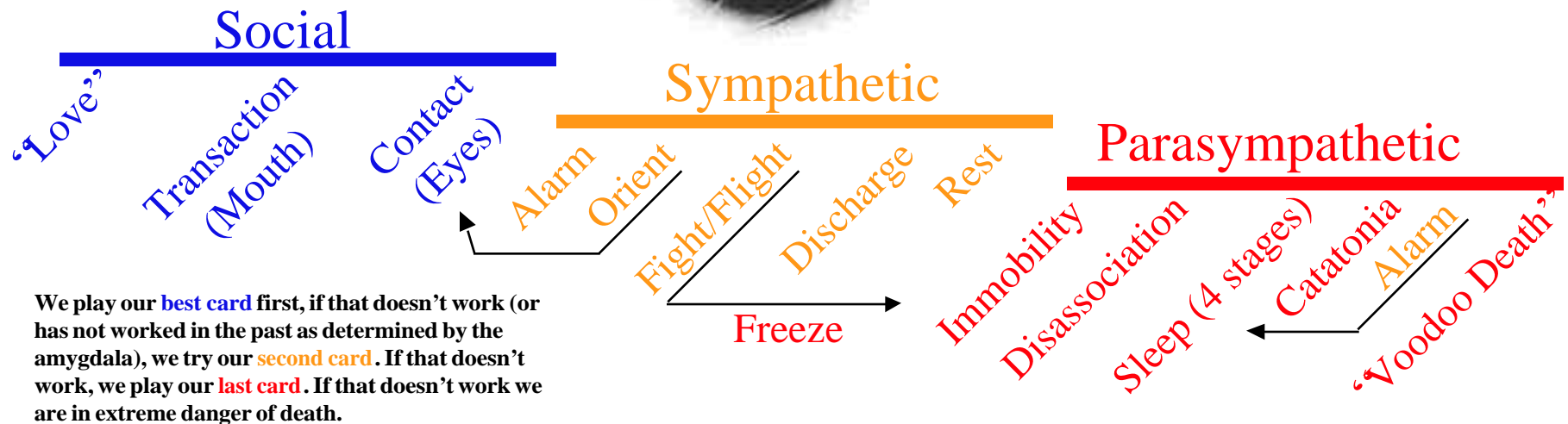


Theory of Dissolution

“The higher nervous system arrangements inhibit (or control) the lower, and thus, when the higher are suddenly rendered functionless, the lower rise in activity.”



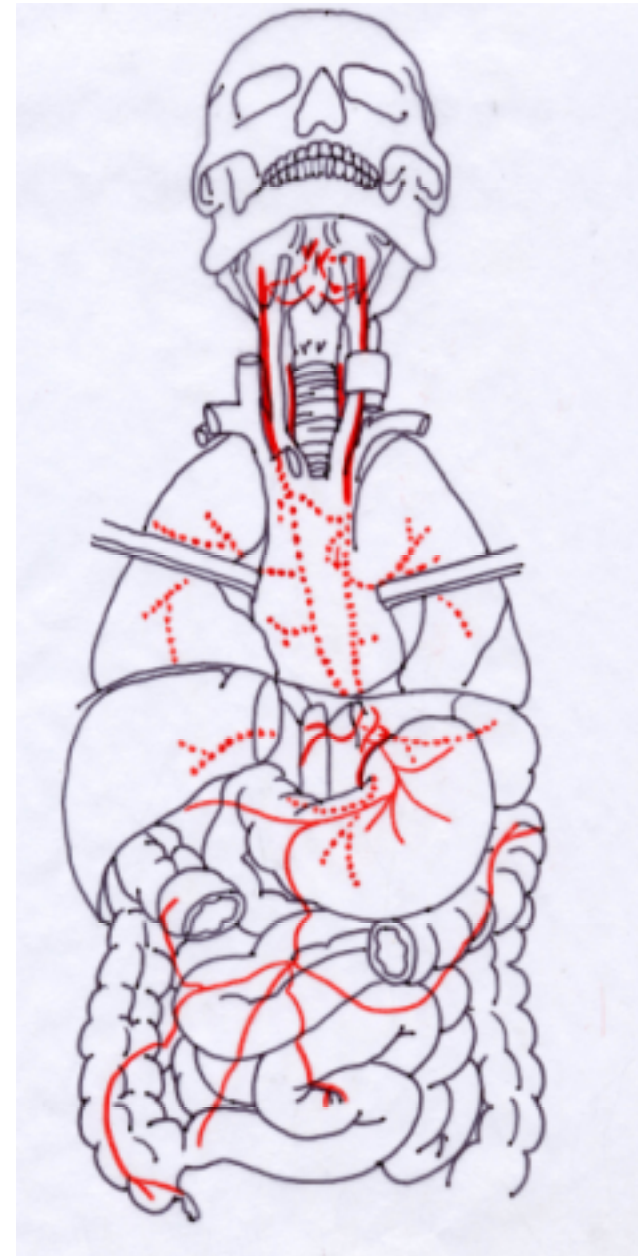
–John Hughlings Jackson (1835-1911)
 Father of English Neurology
 Quoted by Stephen Porges 11/01



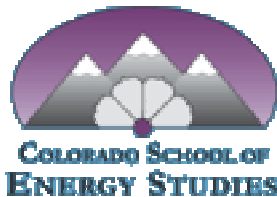
Parasympathetic Portal 1: Vagus Nerve

PORGES: “A primitive unmyelinated vegetative vagal system that fosters digestion and responds to novelty or threat by reducing cardiac output to protect metabolic resources. Behaviorally, this is associated with immobilization behaviors.”

**Vagus
Nerve
Pathway**

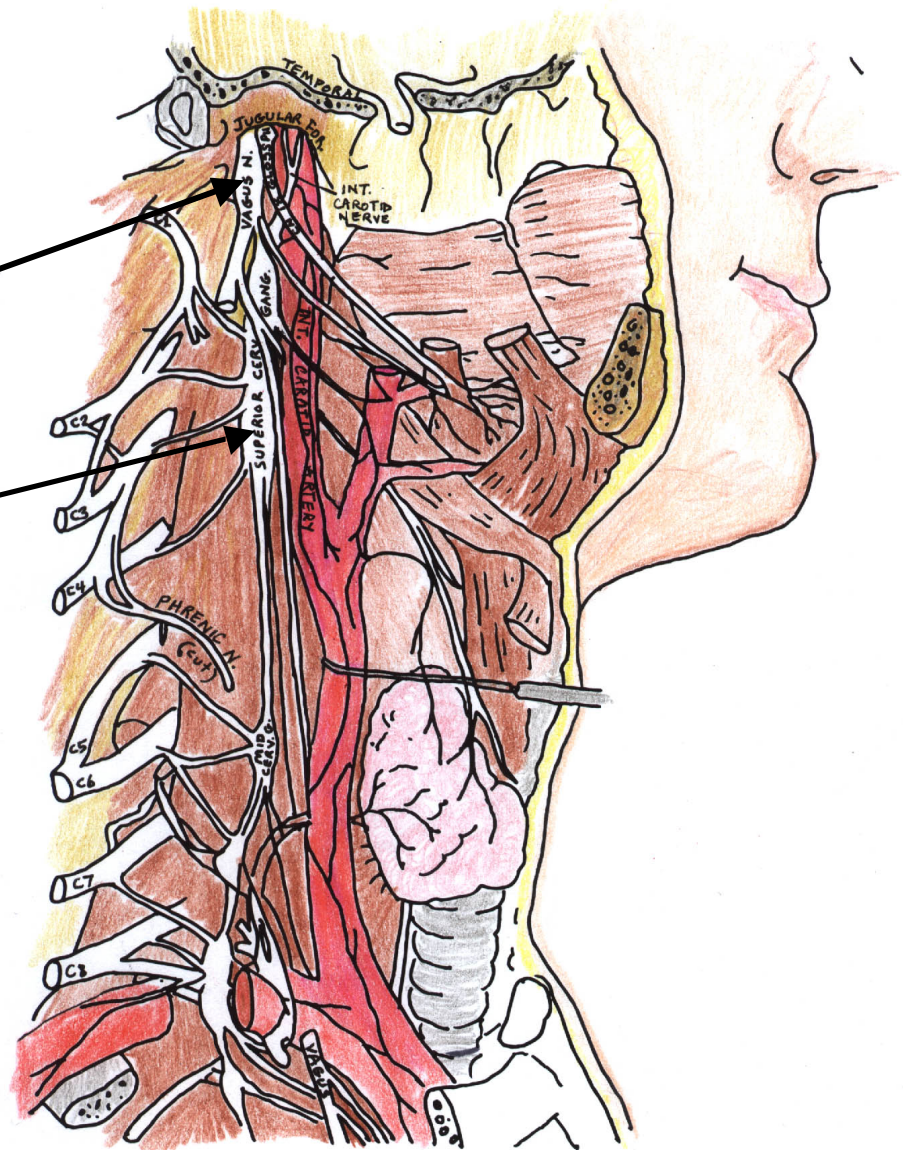


*Art by Renee
Peterson, based on
Wilson-Pauwels*



Neck Structures

The Vagus Nerve And Superior Cervical Ganglion may serve as “portals” for interacting with the autonomic nervous system’s parasympathetic and sympathetic levels, respectively.

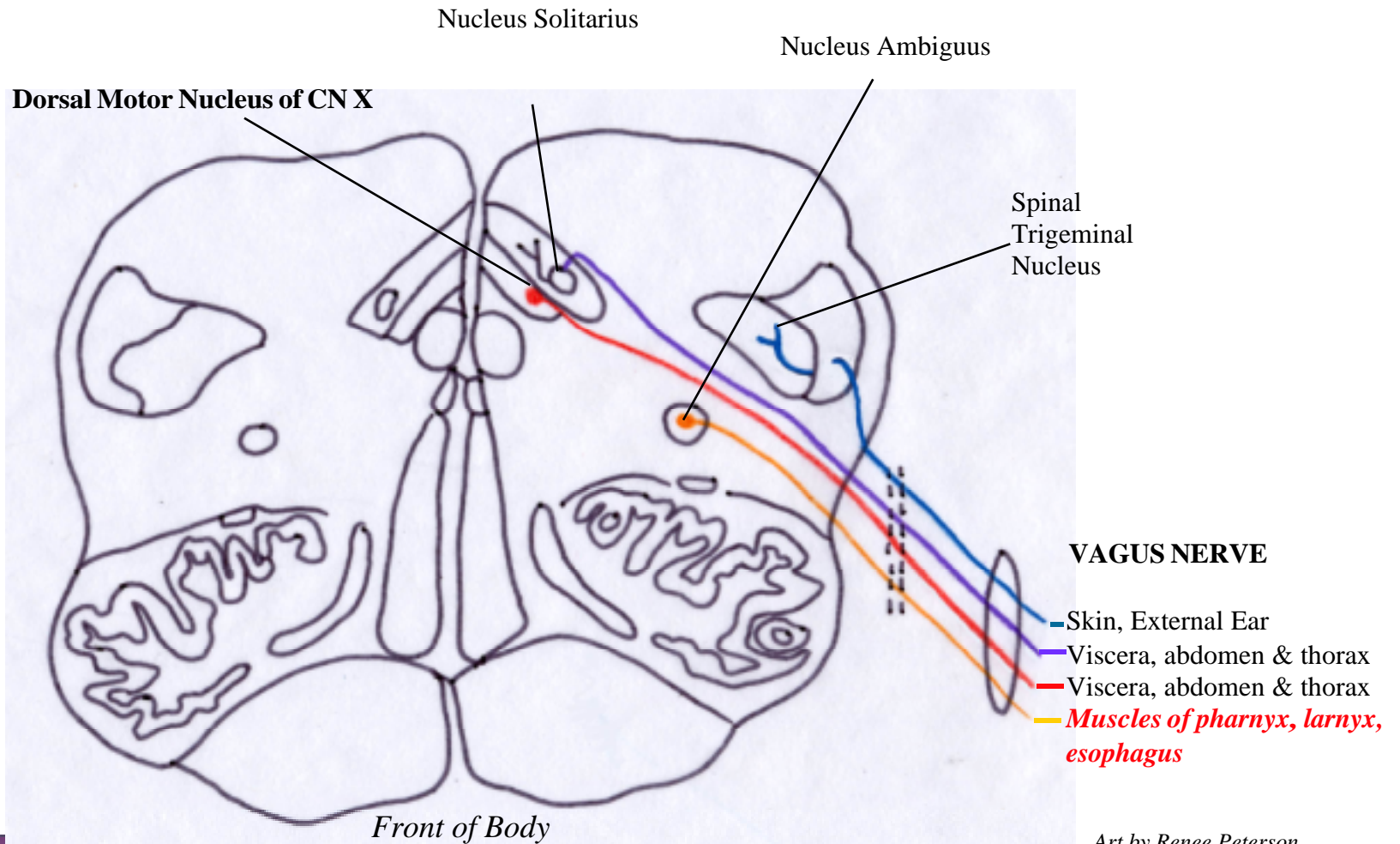


Art by John Chitty,
based on Netter, Atlas of
Human Anatomy, Plate
124



Vagus Nerve Nuclei Diagram

and, the origin of the term “Polyvagal”

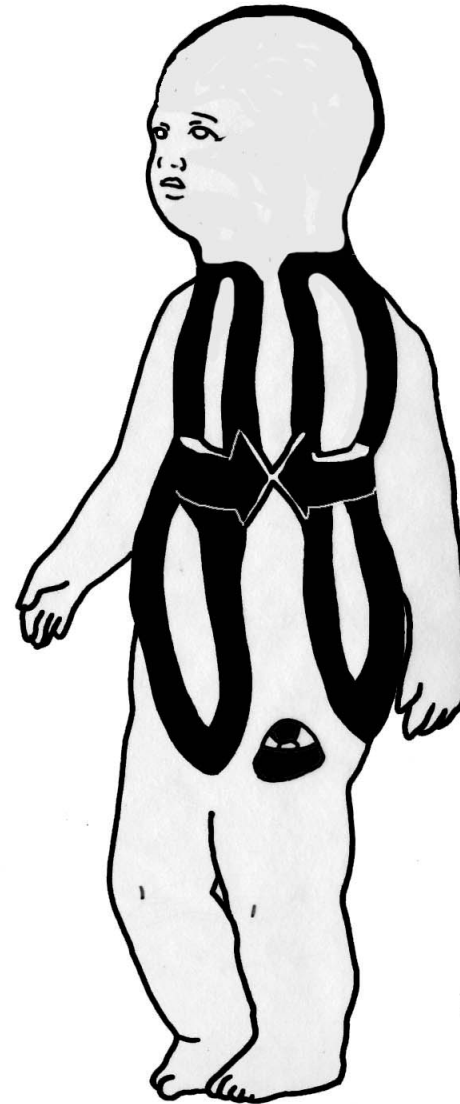


Art by Renee Peterson,
based on Mosby
“Brainstorm” CD

These are long fibers in the brain stem, at and just above the level of the foramen magnun

Parasympathetic Portal 2: Visceral Tube

- The torso of the body may be visualized and palpated as a “single unit of function” incorporating the most primitive survival functions.
- The diaphragm often seems to be a key organizer for the whole autonomic system (Stone, 1948).



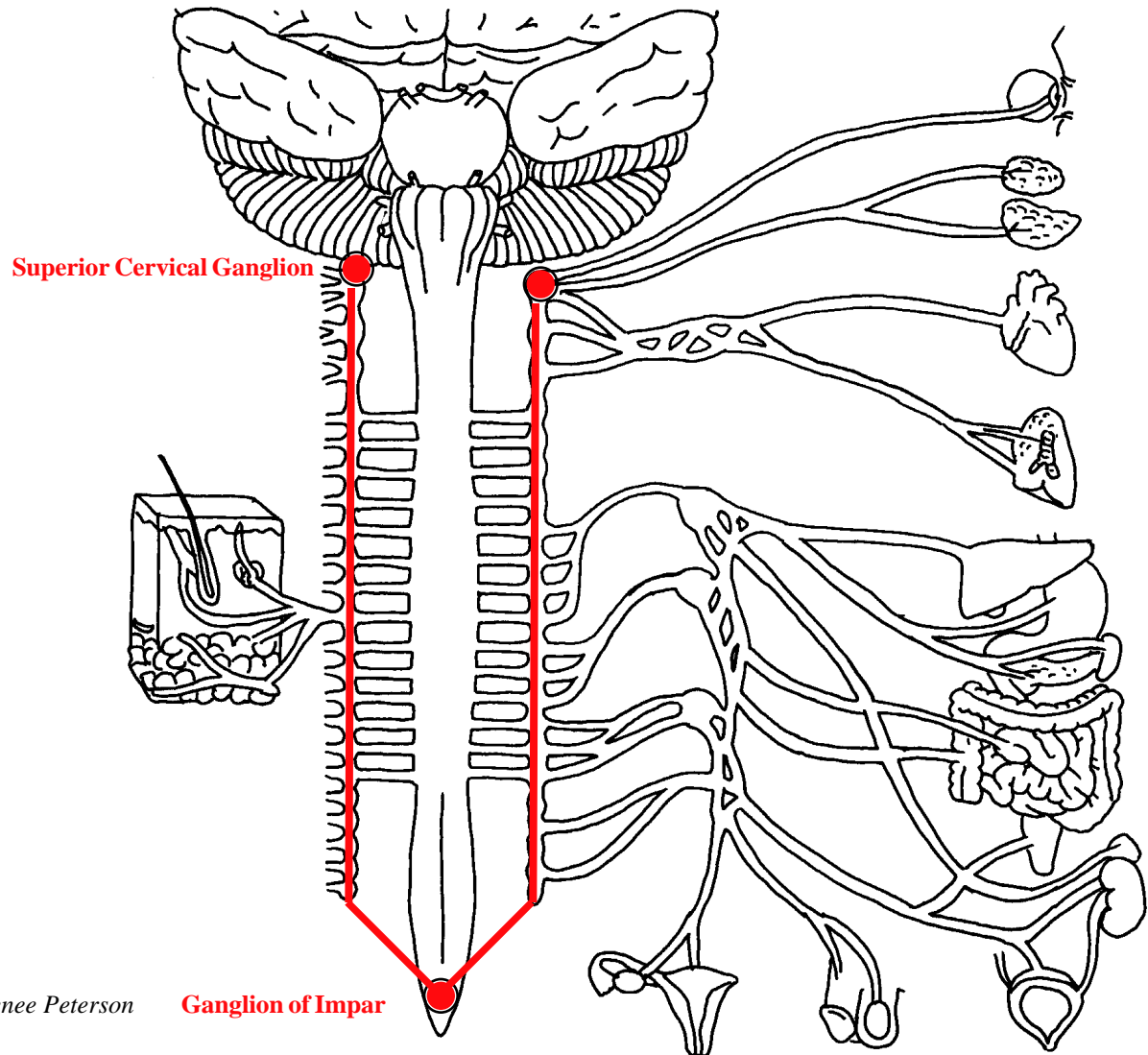
Art by Renee Peterson,
based on Keleman,
Functional Anatomy

Sympathetic NS Portal

PORGES:

“A spinal sympathetic nervous system that can increase metabolic output and inhibit the primitive vagal system’s influence on the gut to foster mobilization behaviors necessary for “fight or flight.”

“...with the exception of work by Cannon, which focused on the sympathetic-adrenal system as the physiological substrate of emotion, the presumed neural regulation of affective state has not been investigated...”



Art by Renee Peterson

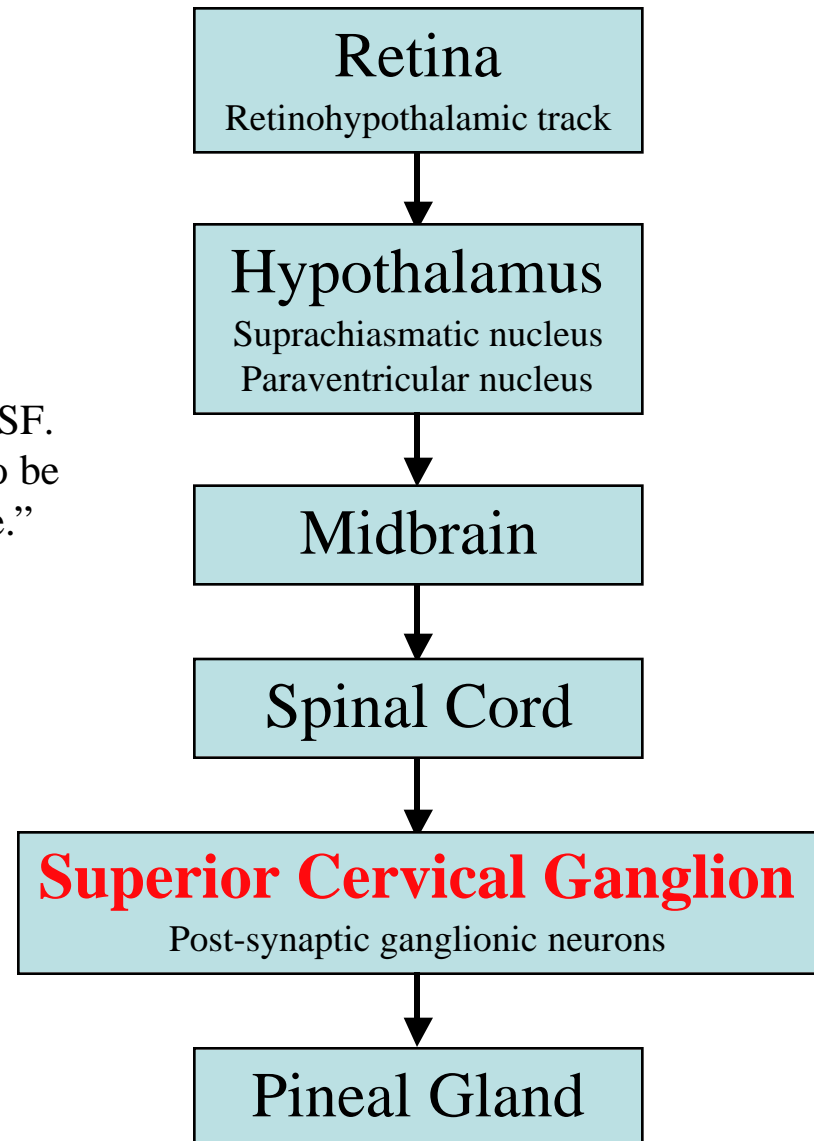


Superior Cervical Ganglion Highlights

- Primary & direct innervation of pineal gland (melatonin/CSF).

Pineal is neuroendocrine transducer; transforms neuronal signals into hormonal messages
Melatonin informs endocrine system of basic environmental conditions especially light, via CSF.
Cerebrospinal fluid is said by Sutherland, et. al., to be the key medium of energetic “ordering principle.”

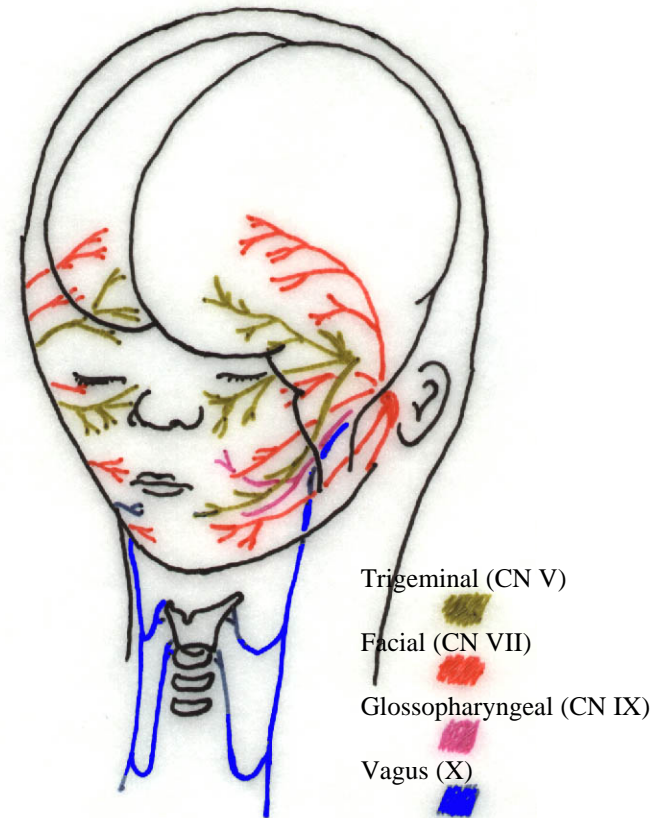
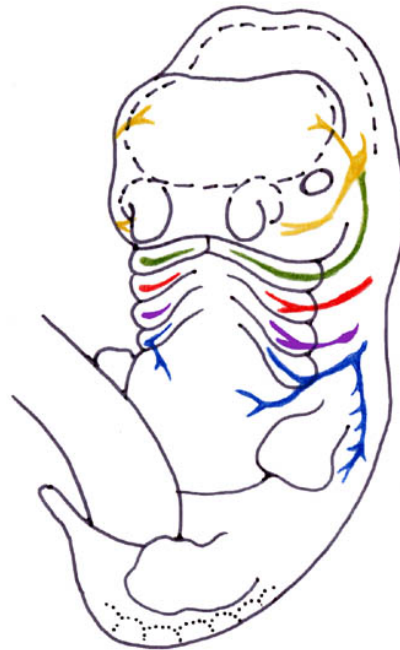
- Target organ for hormones (oxytocin, prolactin)
- Affects water balance, photo sensitivity (circadian rhythm), thyroid



Social NS Origin and Portal 1

PORGES: “Unique to mammals, characterized by a myelinated vagal system that can rapidly regulate cardiac output to foster engagement and disengagement with the environment... [it] fosters early mother-infant interactions and serves as a substrate for the development of complex social behaviors... In addition the mammalian vagal system has an inhibitory effect on sympathetic pathways to the heart and thus promotes calm behavior and prosocial behavior.”

Pharyngeal Arches- 5 & 20 weeks



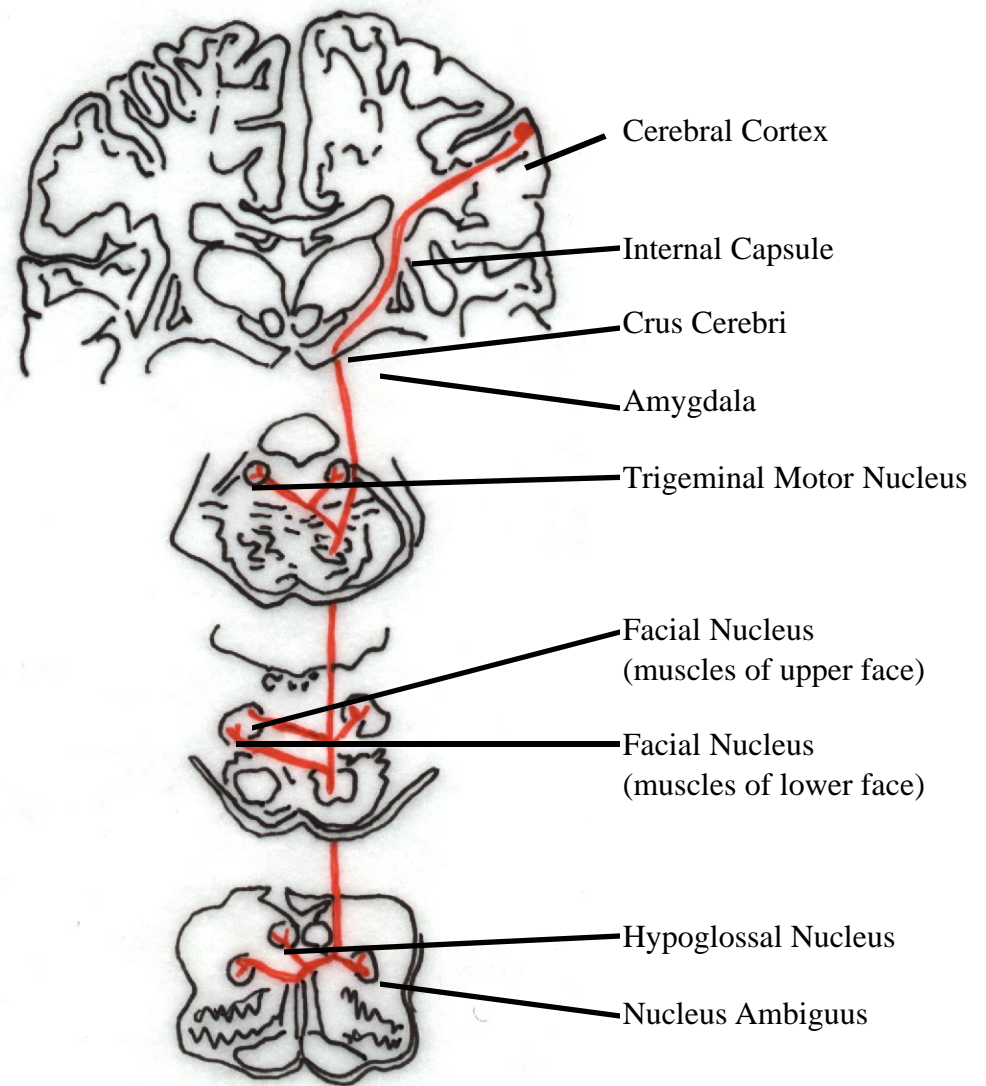
Art by Renee Peterson & John Chitty, based on
Larsen, *Human Embryology*, p. 362



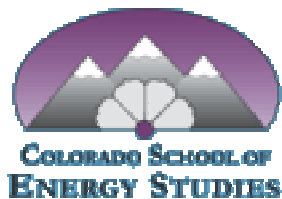
Social NS Portal 2: Corticobulbar Tract

Another candidate for unified viewing of the social nervous system anatomy is the corticobulbar tract, a series of brainstem formations including all but Cranial Nerve XI.

However the term is obscure and the visualization opportunity is complex at best.

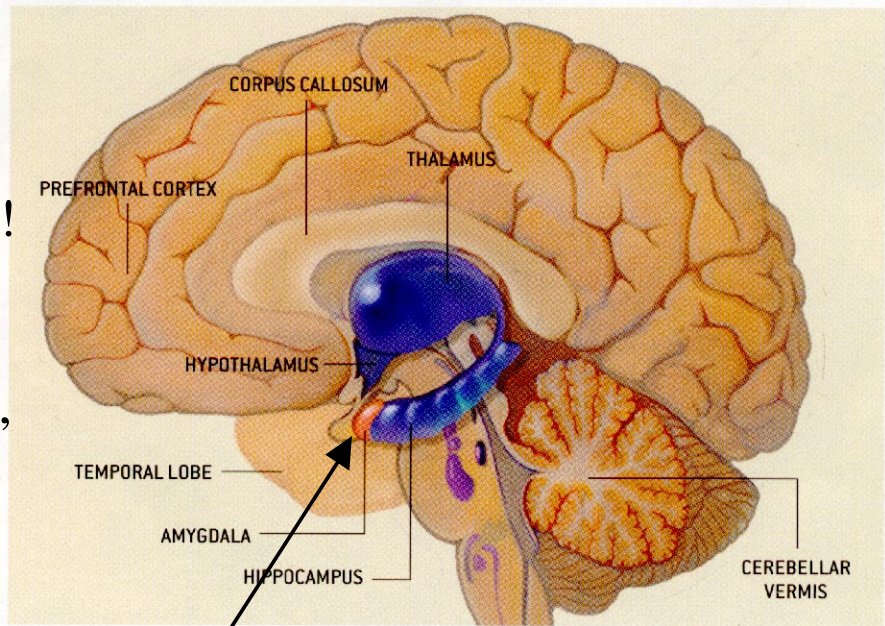


*Art by John Chitty, based on
Mosby "Brainstorm" CD*



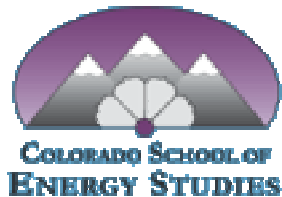
Amygdala Highlights

- Sorts experiences to identify threat, based on earlier experiences.
- Central role in stress response.
- Can it be “reset?” This is the holy grail of body-centered trauma work! Some osteopaths and craniosacral therapists say “Yes!”
- “From the point of view of survival, it is better to respond to potentially dangerous events as if they were in fact the real thing, than to fail to respond.” (LeDoux, The Emotional Brain, p. 165)



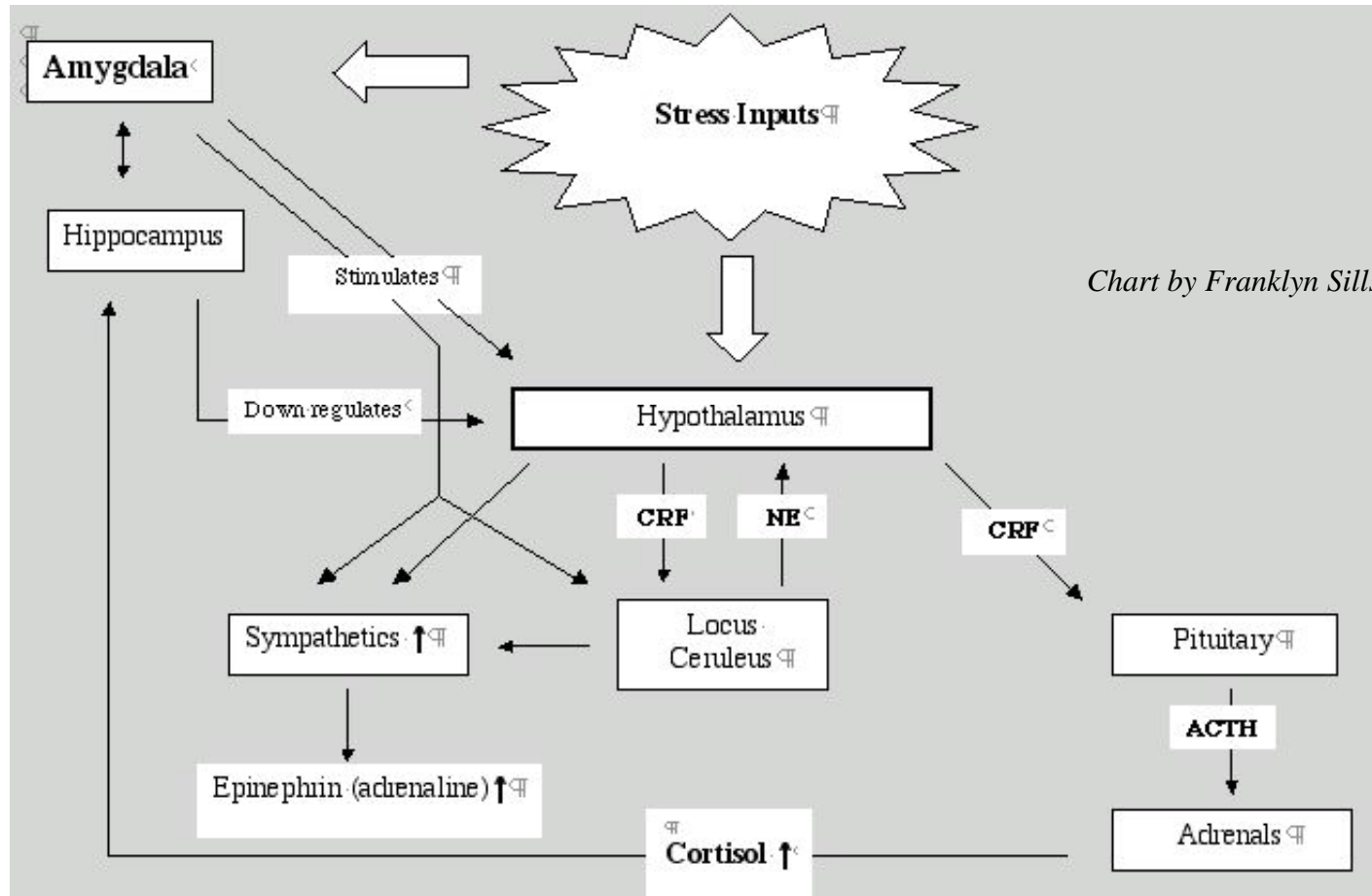
See if you can “find” it in yourself as a “felt sense!”

- One inch inside temples, both left and right
 - Directly behind eye socket
 - At anterior end of dorsal horn of lateral ventricle
- ...then, imagine that you can nudge it forward
(Reference: www.neilslade.com)



HPA Axis

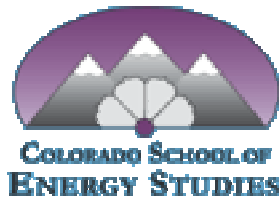
Hypothalamus-Pituitary-Adrenal



Initial Applications

Two simple, no-cost changes in current standard practice to support large-scale autonomic wellness

- Maternal Bonding
 - Let the baby be with the mom, skin-to-skin, for 20+ minutes! Stop the fast takeaway!
 - Minimize vacating of awareness (anesthesia)
 - Gentle handling and slow soft contact
- Circumcision
 - Stop the practice
 - Focus discussion on its negative effects on the autonomic nervous system (not tribal or pseudo-medical agendas)



Experimental Triune NS Session Summary

- 1. GENERAL:** supporting soft, open cranial base (especially jugular foramina where the vagus exits the cranium) with good midline balance and potency.
- 2. PARASYMPATHETIC:** Have client notice breath sensations at belly. Visualize torso including viscera as elongated torus shape and one whole unit of function, seek state of balance. With index fingers on vagus at sides of neck, visualize pathway of visceral vagus and seek state of balance. Check diaphragm (including phrenic nerve) as natural fulcrum of connective tissue, seek state of balance. Hold recognition of primitive immobility state.
- 3. SYMPATHETIC:** Ask client to flex muscles of arms and legs to engage mobility, then relax and track subsequent sensation. With index fingers on superior cervical ganglia below ears, visualize pathway of sympathetic chain, notice shape, seek state of balance. Hold recognition of mobility, experience of sympathetic function and value.
- 4. SOCIAL:** Ask client to visualize a person or pet in childhood, “whose eyes would light up” if they met, someone who had a simple, mutually warm and friendly relationship; relatives, school playmates or pets seem to be most likely to qualify; next of kin are too complex. Alternatively, the imagined encounter can be an archetype or purely imaginary. The key is invoking the bright smiling facial expression. Once this imagined visual experience is established, have the client shift to sensation tracking. With index fingers lightly in ear canal, visualize middle ear anatomy and seek state of balance, including petrous portion of temporal bone. Visualize “pharyngeal arches” embryonic cluster, seek state of balance. Hold recognition of maternal bonding archetype.
- 5. AMYGDALA:** Visualize amygdala as almond-sized bump at the anterior tip of the dorsal horn of the lateral ventricle on each side. Notice difference side to side, compressive quality or shape, seek state of balance and or gentle anterior nudge. Hold recognition of “filter for threat” function, ask client to notice safety of here and now.
- 6. INTEGRATION:** Polarized contact hip to shoulder, or foramen magnum to coccyx, or light rocking perineal/side of neck; seek state of balance and pulsation equilibrium.

