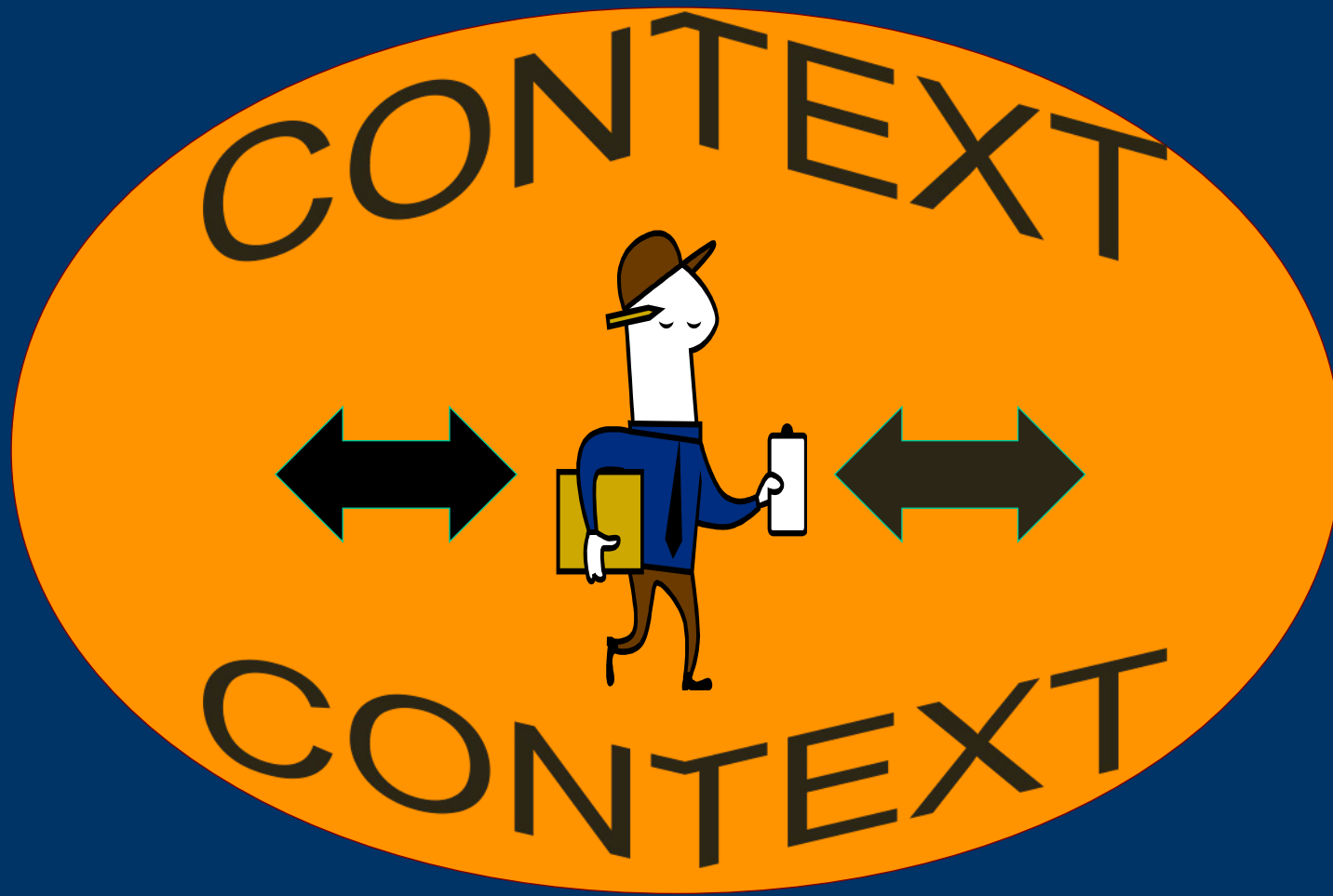


***“Evoking, exploring and shaping
relevant bodily responses”***

Maarten Aalberse & Niklas Törneke

WELCOME!

Functional contextualism



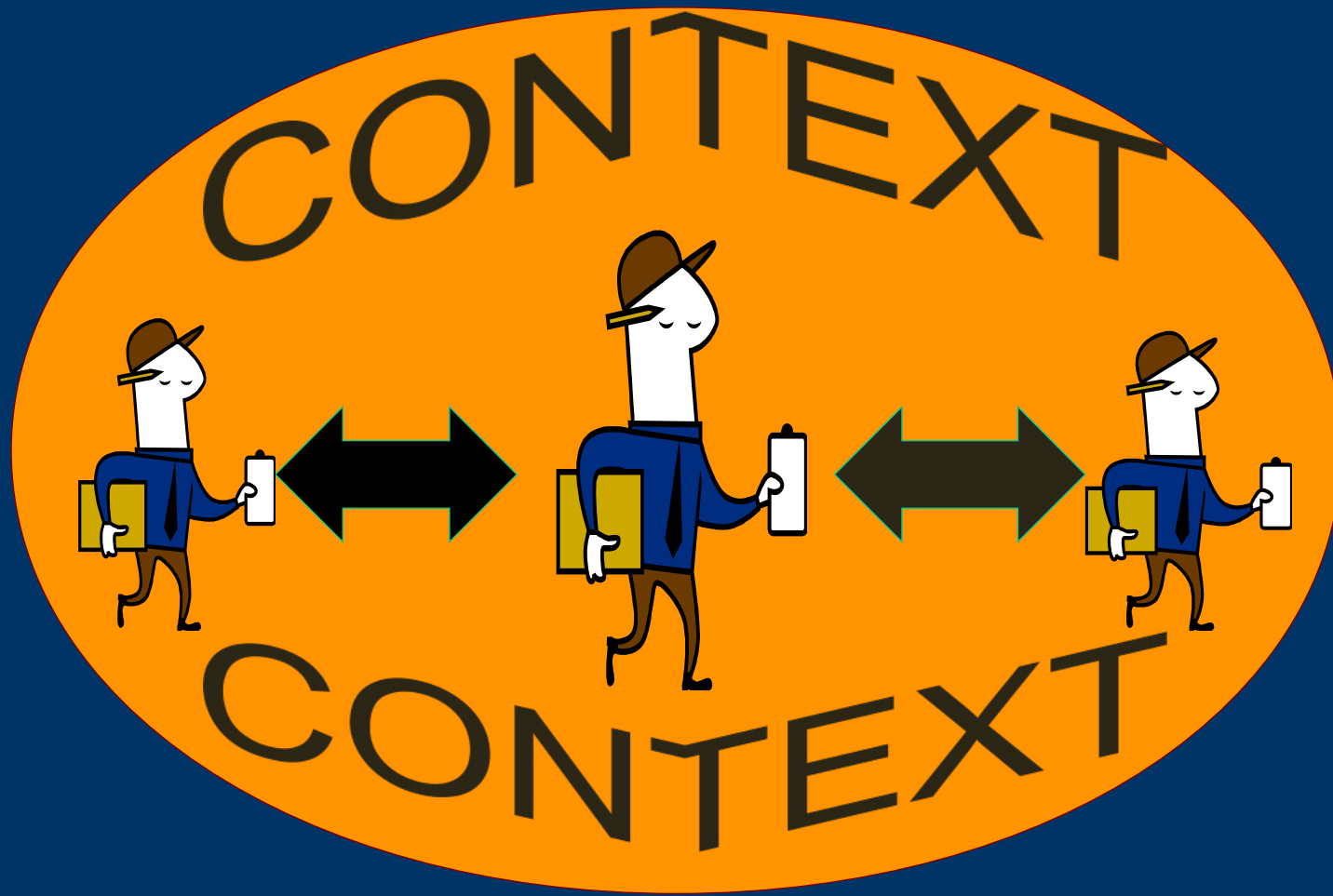
What about “the inside”?

Thinking, feeling, remembering etc is behavior which is subtle or private and thus hard to observe, except for the person doing it (and sometimes even...)

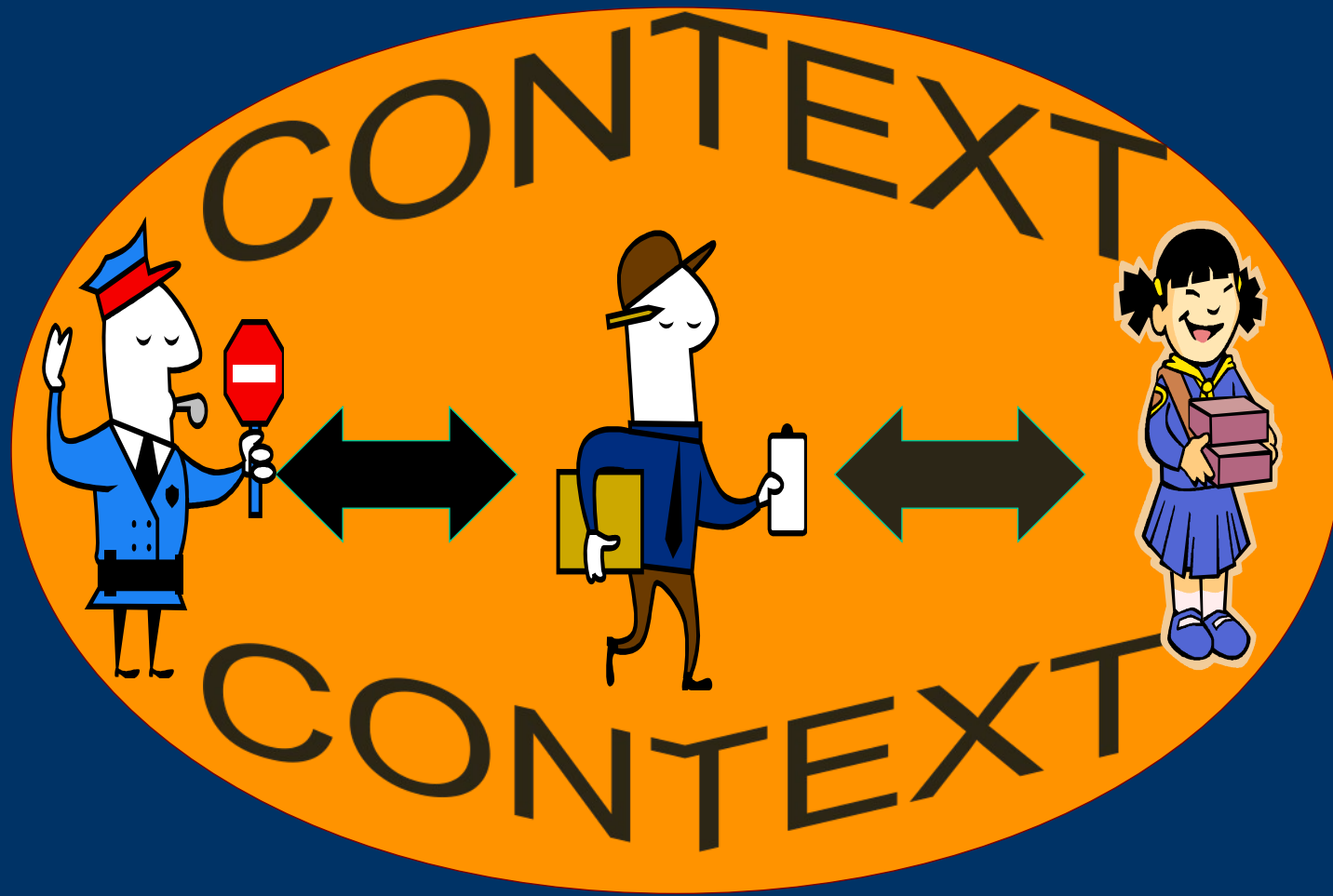
Subtle behavior can be understood using the same basic behavioral principles as for understanding other behavior and *is also influenced by rearrangement of the context*

Subtle behavior can effect other behavior of the same organism as in other behavior–behavior interaction

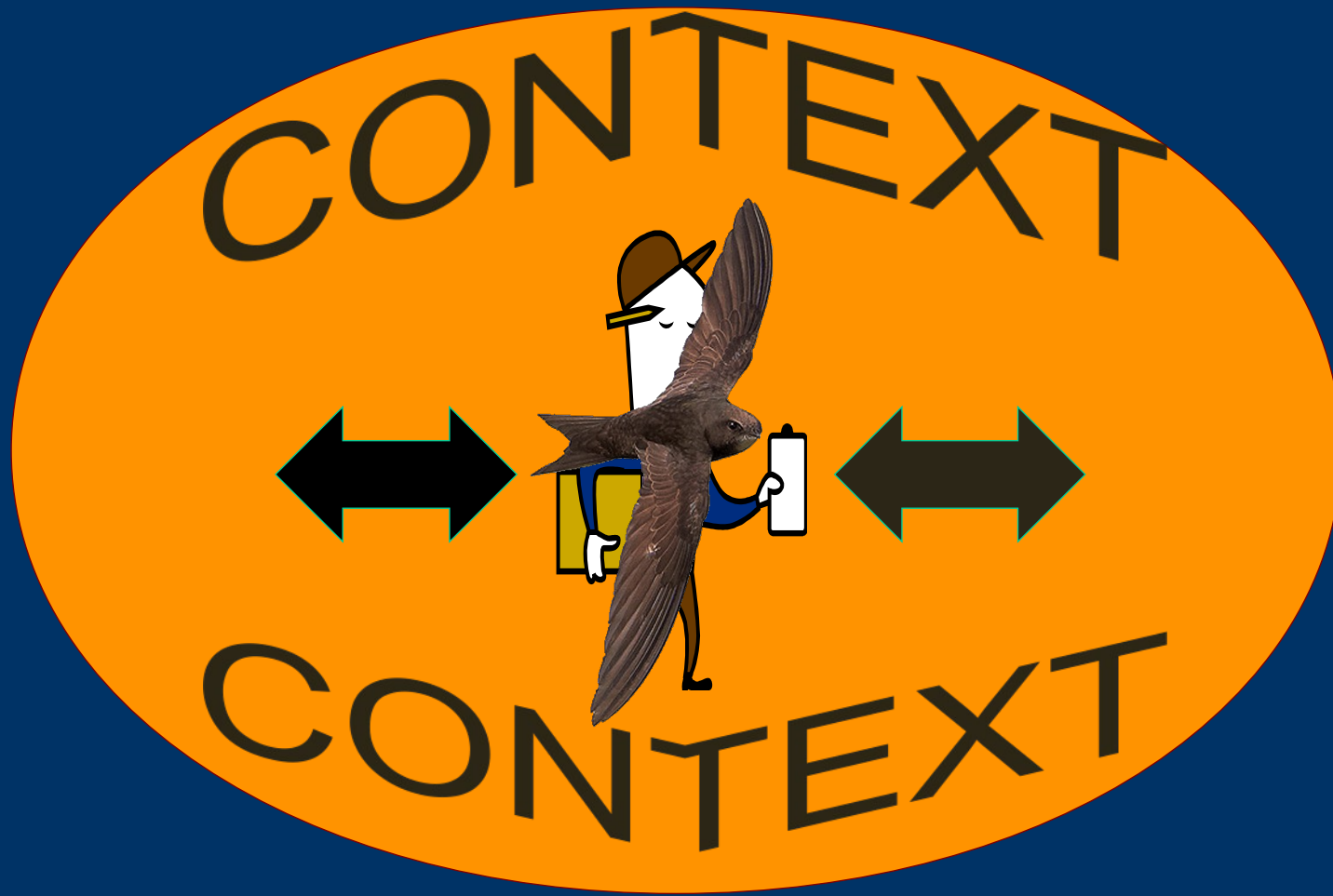
Functional contextualism



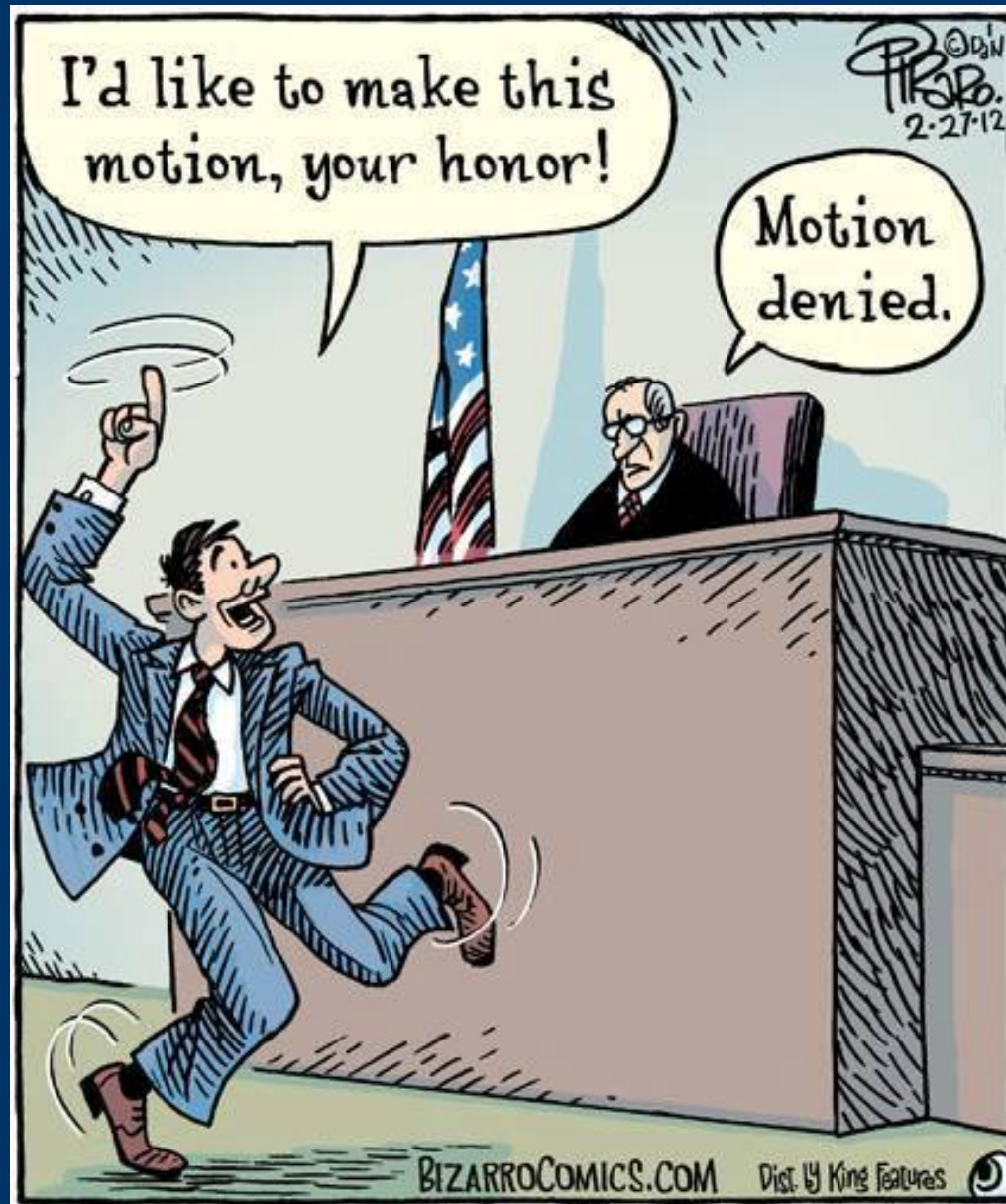
Functional contextualism



Functional contextualism



Towards : « Motion Sustained »



« How » complementing the « What »

Little experiment : Make compliment, saying the same words, with a « thick » tongue, a « sharp » tongue, a « flexible » tongue.

We'll focus less on « **What** we say » and more on the often underemphasized other side : « **How** we say what we say ».

Quality of speech = strongly related to

- 1) how we breathe ↔ the functioning of our ANS
- 2) how we sense & use our tongue ↔ „ „

More in general : the « **how** » is about « Qualities of behavior », which (can) manifest and be shaped in the present interaction.

Theoretical base :

Principles of Poly-Vagal Theory (Stephen Porges)

Integrated with :

A simple and verifiable model of basic movement-patterns derived from Fascia- and Movement Therapy (Danis Bois)

Unusual, simple & often effective practices : *ACTivating tongue- and head-movements, 1*

When client mentions a « no » that is too intense or too weak for that context :

Are you interested in doing something that can help contacting a more solid / centered / peaceful « no » ?

If client agrees, invite her to :

- **Slowly, gently glide tongue** back & forth along the gums of upper teeth, and notice what head-movements get activated.
 - **Repeat the movements, after having chosen a sentence such as :**
« That's not how I see this ... », « That's not what I'd do, here... », « That's not what I want from you, now ... », « That does not match my values ... »
-
-

ACTivating tongue- and head-movements, 2

« Mindful headbanging »

Often appropriate to follow up /alternate with :

Gently gliding tongue back & forth along the roof of the mouth,
and noticing headmovements,
and including sentences for :

Flexibly responding to self, e.g. :

« Yes, this is there » (& put hand on « there »)

« Yes, this too is part of being human »

« Yes, this is important to me »

« Yes, this I did in service of my values »

Flexibly responding to other, e.g. :

« Yes, sometimes I behave/am like you say »

« Yes, I acknowledge that this is important for you »

Very brief overview of Polyvagal theory



A request

In order to have as much time as possible for experiential work and sharing about your experiences,

Please write down any theoretical questions that might come up for you, and come back to these near the end of the workshop.

Thanks !

These slides are re-accessible on the ACBS website, so no need to « grasp » it right away...

Darwin quote

*“The heart, guts and brain communicate intimately via a nerve – the pneumogastric nerve (or **vagus**) – the critical nerve in the expression and management of emotions in both humans and animals....*

When the mind is strongly excited it instantly affects the state of the viscera.”

We should add to this: « and...vice versa, because...

**... the brain-viscera communication is bi-directional :
+/- 80% of the stimuli are afferent »** (something which is still underemphasized in medical texts).

In addition, it's imprecise to speak of « the » vagus, as there are two efferent branches of vagus with very different functions.

THE vagus → Which Vagus ?

In a **safe-enough** context

The **efferent** vagus is related to two very different functions :

- a) « Rest & Digest »
- b) « Tend & Befriend »

Related to two branches of this efferent vagus :

- a) an evolutionary « older », « reptilian », **unmyelinated** branch
 - b) an evolutionary « newer », « mammalian », **myelinated** branch
-
-

Myelinated (« new ») vagus

Myelinisation → rapid and differentiated responding to contextual cues.

« New », « smart » vagus, activated in **safe-enough** contexts

- regulates **heart and lungs** (« flexible arousal »), as well as the **larynx** (« voice-box »)
- serves as « **vagal brake** » of pacemaker of the heart.
(as Steve H. says : « We have to put our mind on a leash »)

Measured by « **vagal tone** » (HRV, and esp. RSA)

Strong vagal tone ↔ prosociality and compassion

Strong vagal tone ↔ optimal affect (co)regulation,
optimal physiological functioning

Vagal « **hyper-tone** » (+ dopamine?) ↔ euphoria, hypomania.

Unmyelinated (« old ») Vagus :
two very different functions, depending on context

Safe-enough context : regulates of organs below diaphragm

Rest and digest, low (striated) muscular tone ;
in safe-enough interpersonal settings also related to
activation of oxytocinergic system

However ...

Threatening context ↔ resignation, shut-down, numbing,
hypotonic freeze & dissociation.

Risky side-effects : hypoxia/ CO2 overdose

→ High parasympathetic activity can **also** relate to
costly defensive processes

Myelinated vagus & prosocial engagement

Myelinated vagus : **one system** with other cranial nerves, related to

- ✓ Facial sensation (awareness of emotion) and expression,
- ✓ Listening & vocalizing,
- ✓ Adapting visual focus & shifting perspective
- ✓ Orientation movements of the head
- ✓ Calmly rocking movements of head – soothing (baroreceptors)

All related to communication →

Myelinated vagus & other cranial nerves together =
« Social Engagement System »

ANS : a hierarchical system of adaptive responses to contextual cues

CONTEXT

ADAPTIVE ANS RESPONSE

1) SAFE-ENOUGH

SOCIAL ENGAGEMENT System,

Myelinated vagus

↔ **Bias** towards perception of safety-signals,

↔ **Flexible** increase-decrease of arousal

↔ Prosociality, compassion

2) DANGEROUS

MOBILISATION system (SNS)

« Vagal brake » withdrawn ↔ Sympathetic NS takes over,

High arousal, Fight/ flight ↔ **Bias** towards signals of danger

3) LIFETHREATENING

IMMOBILISATION System

(fight / flight not possible or too dangerous)

Unmyelinated vagus dominates ↔ **Bias** towards signals of lifethreat

Low arousal, resignation, fainting, numbing, shut-down, dissociation

A common misunderstanding

These three systems (SES, MS, IS) describe three classes of **orientation and activation**.

They do **not** describe distinct sets of **emotions** (e.g. enjoyment, anger/ fear, despair)
but « qualities of responding », e.g. :

SES

Calm disagreement,
Assertiveness

Distress-calling
(reaching out)

MS

More explosive
anger

Agitated, contactless
grief

IS

Simmering anger

Silent/ withdrawn
grief

Back to experiencing : Coordinating tongue-mvts, head-mvts, spinal- and breath-mvts.

**Return to gliding tongue backwards and forwards.
Let the head follow.**

Breathe in when « nose » moves up and out when « nose » moves down.

Notice how spine tends to go into extension with inhalation, and into extension with exhalation.

Augment spinal movements, in coordination with mvts of breath.

Gradually slow down the mvts of the spine, and notice how breath slows down.

Consequences of ineffective SES

Excessive responses of **a) MS** and/or **b) IS**

→ compromised affect-regulation and physiological functioning:

a) High tonus of most striated muscles & low tonus of smooth muscles, high bloodpressure, tachycardia, over-active immunesystem, stronger inflammatory responses,

b) Low tonus of most striated muscles & high tonus of smooth muscles, constriction of bronchia, bradycardia, overactive bowels, nausea, too low blood pressure, and possibly : hypoxia / overdose of CO₂

2 conditions for reactivating the SES

a) Co-create a safe-enough context

- calm environment
- therapist emits signals of attuned social engagement

b) In a safe-enough context, stimulate nerves & muscles related to the SES – (e.g. tongue, middle ear muscles, intrinsic muscles of eyes, prosodic voice, slowing down outbreath and bodily movements) by practicing « **polyvagal yoga »**

→ May also re-evoke previously avoided experiences which, in this context, can be more effectively explored and shaped.

« Polyvagal yoga practices » can serve as doable « homework » practices for self-care.

Probable benefits, for clients, – of adequately reactivating SES

- a) « polyvagal yoga » regularly practiced → it more often suffices, that the therapist emits signals of Social Engagement, for the client to begin to reactivate her own SES.
 - b) Client's SES activated in daily life ↔ increased likelihood that others will become less defensive, more prosocial.
 - c) PV-Yoga increases awareness of moving in and out of SES, and better enables us to check if this is functional in « this context ».
 - d) Clinical experience suggests that when SES is reactivated, persons can more easily access qualities of behavior **valued** by them.
-
-

Probable benefits, for therapists, of practicing « polyvagal yoga »

- ***Less burn-out***
 - ***Enhanced peacefulness, empathy & compassion***
 - ***More likely to function in coherence with values-as-a-therapist***
 - ***Experiencing how a shift of « state » ↔ shift in perspective on client***
 - ***More likely that client feels « safe-enough »***
 - ***Clearer awareness of when he himself moves out of SES***
 - ***Clearer awareness of indications that client moves in or out of SES***
 - ***More congruent in proposing polyvagal practices to client***
-
-

Some more misunderstandings related to PVT

- 1) PVT contains some misrepresentations of cognitive sciences and behaviorism.**
- 2) So. Engagement doesn't exclude « limiting », « discouraging », nor « a firm stance », but it still facilitates ongoing connection.**
- 3) Risk of idealizing the benefits of Social Engagement, rather than promoting flexible shifting between the three response-classes ; each of these is functional in specific contexts...**

This means that clients also may need to familiarize themselves better with « fight-flight » and « shut-down » responses, i.e.

- know how to enter into these states,**
 - be OK with these states and**
 - know how to move out of these, when the context permits this.**
-
-

Just in case : how to evoke safe mobilisation or immobilisation ?

MS (esp. for developing active in addition to passive defenses) :

- Increase velocity, turn **up** the volume and/or pitch, 'Divergence'
- Evoke, support, and reinforce more intense « no-ing », pushing away, stamping, running away from & towards
- Affectionate teasing, a bridge to Play and Social Engagement

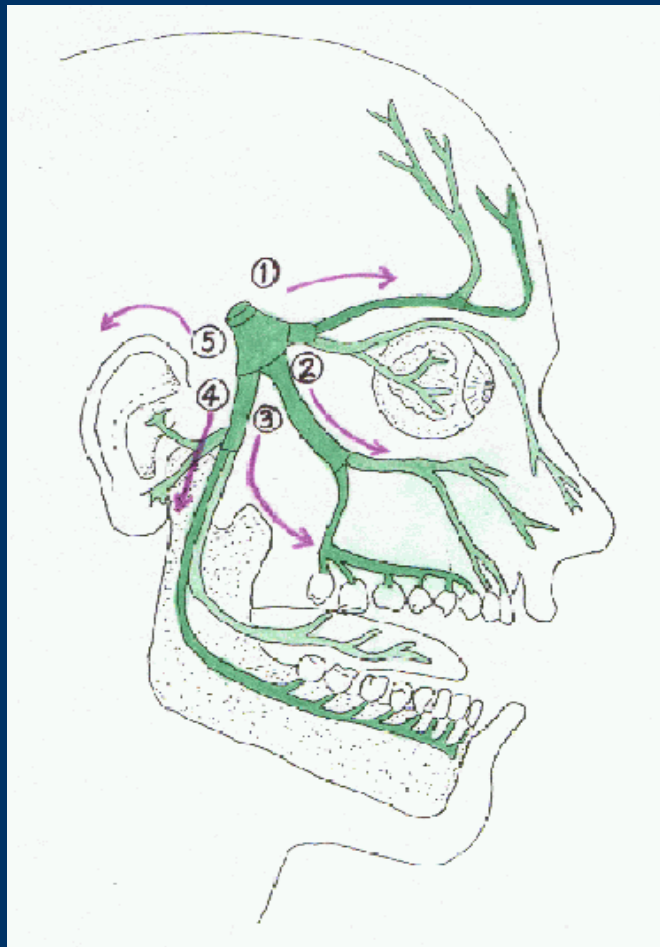
IS (eg with chronic hyperventilation, sleep disorders, chronic avoidance of dis-engagement) :

- Slow way **down**, minimal breathing (apneas by the therapist tend to induce apneas in the client), 'Convergence'
 - Turn down the volume (even use a « hypnotic » voice)
 - Trance-like imagery
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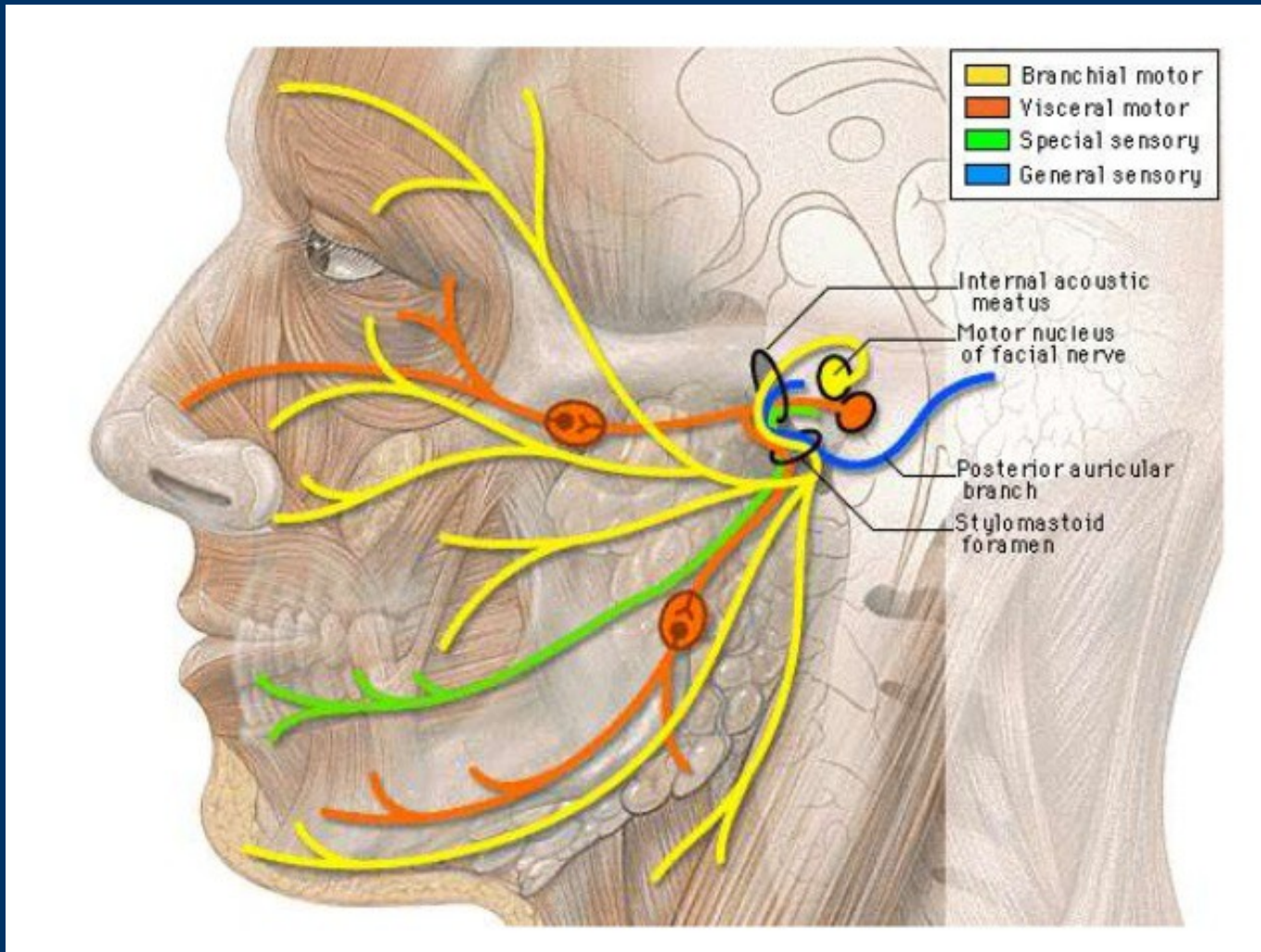
Scientific support for PVT ?

- 1) No published serious negative critiques on the neuro-physiology of PVT, and much « expert » endorsement.
 - 2) Pediatric studies confirm predictions derived from PVT
 - 3) Data about the relationship between **vagal tone** and **compassion/prosociality**, as predicted by PVT, but we need more studies.
 - 4) Ongoing research about the effects of « **auditory intervention** », esp. for people on the spectrum.
Published data for now cohere well with predictions of PVT.
-
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Tongue movements <-> Trigeminal Nerve, involved in Sensing facial expression, mouth and tongue Activating chewing (flexible jaws) and swallowing (flexible tongue)

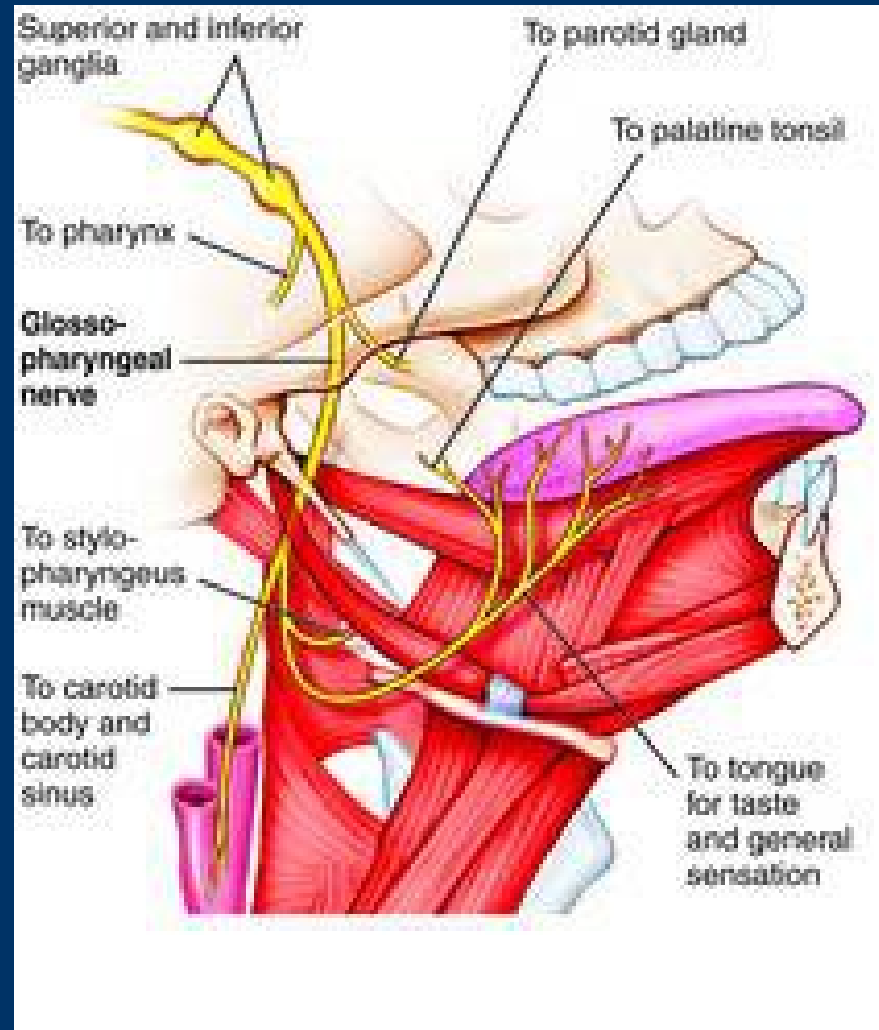


Facial nerve (CN 7) Expression of (esp. upper) face ;
Tear-production, salivation, taste ;
Regulates middle ear muscles.

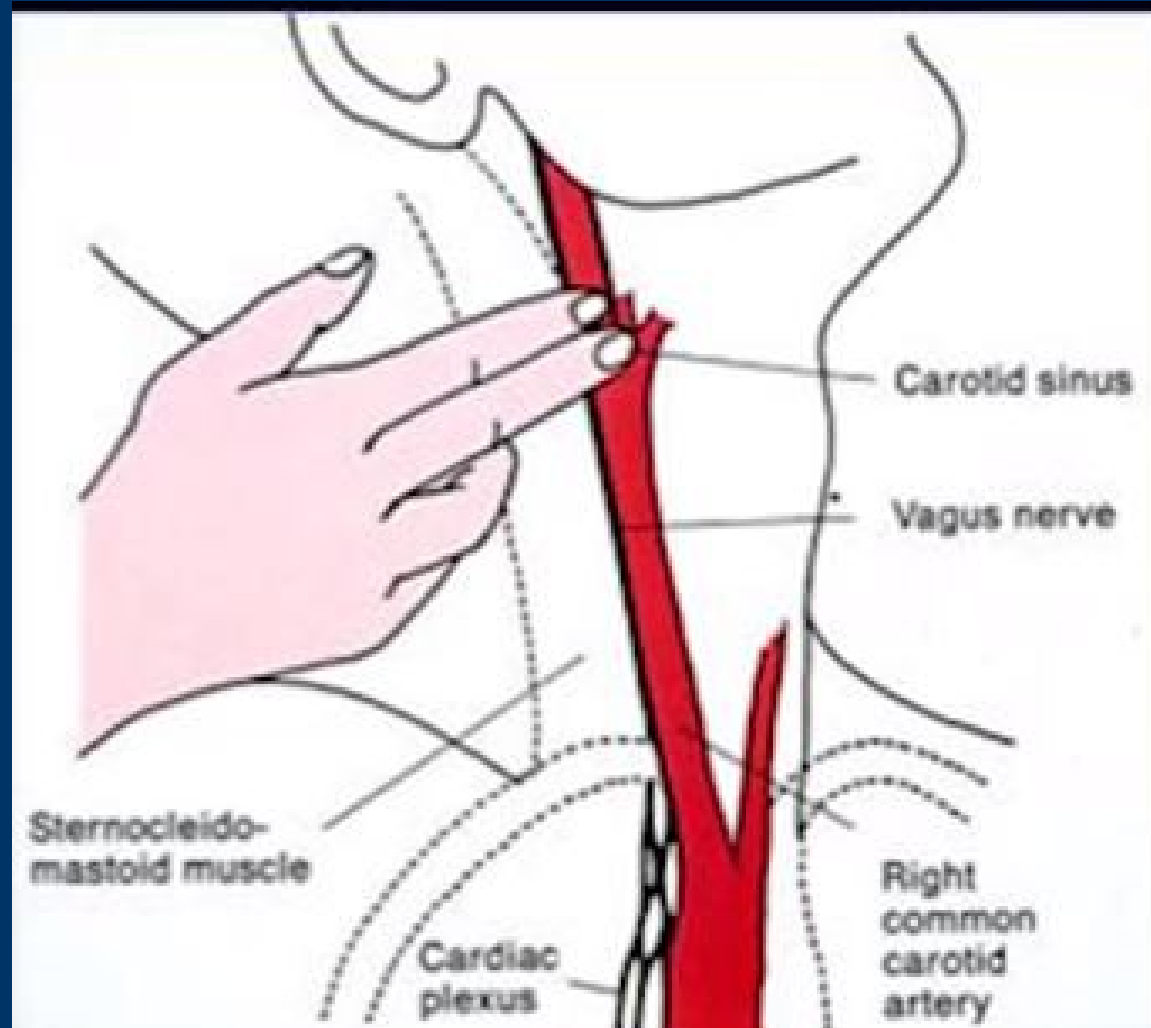


Glosso-pharyngal nerve (CN IX) :

**Tongue-sensations and taste
Involved in speech**



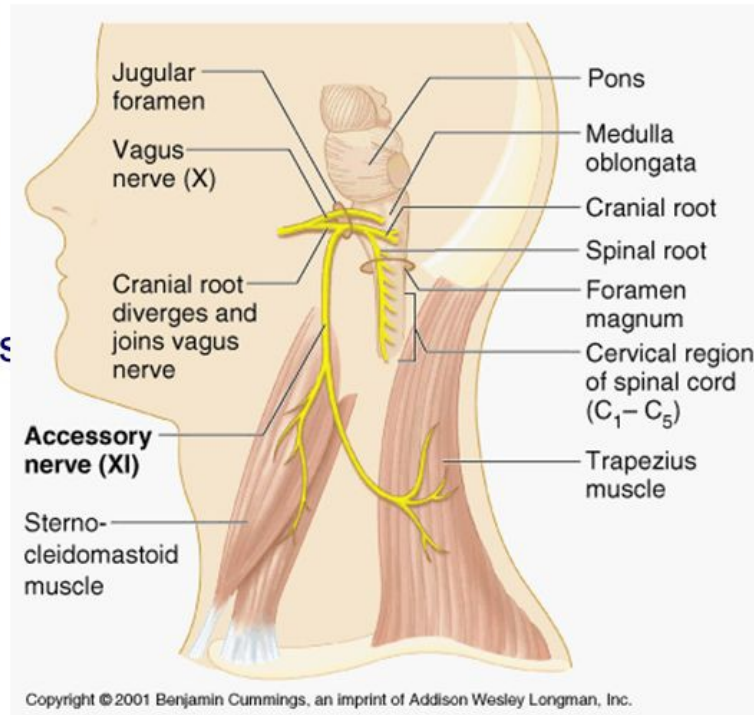
Rocking headmovements activate :
CN XI and Baroreceptors in carotid artery



Rocking headmovements also activate : CN XI
Sterno-cleido-mastoid and Trapezius
(A responsive trapezius « unburdens » neck , and accomodates breath)

CRANIAL NERVE XI

- ACCESSORY NERVE
Motor
 - Functions:
 - Turning Movements of Head
 - Shoulder Movements
 - Movements of Organs Supplied
 - Voice Production



Auditory intervention : the « Safe Sound Protocol »

Good outcomes, so far, for sound-sensitivities and emotion-regulation, esp. with persons on the spectrum.

Research on effects SSP for PTSD & chronic pain under way.

My hypotheses :

Activating SES by SSP helps clients directly experience the intra- and interpersonal merits of SES, .

This prepares the ground for other « PVT-yoga » practices.

We can establish connections between :

- the results of these practices and
- valued qualities the client wants to embody more.

Exposure enhanced by these practices then becomes :

a way of activating valued qualities of behavior in increasingly difficult circumstances.

More experiential exploration...

« Yessing » with the whole body

**From head-movements to coordinating
breath with whole-body movements.**

**And their relationship with « convergence-
divergence »,
and with Polyvagal Theory.**

**A basic model, useful for classifying and
shaping bodily responses**

Questions for reflecting / sharing

Which movement(s) / positions felt « natural » ?

Where is your comfortzone ?

When/ where did you feel less at ease ?

What showed up, there ?

What was it like to Move closer to that « space » ?

To enter it for a while ?

To move out of it again ?

What does this suggest about your way of functioning ?

See also next slide, for plausible relations.

From head movements to whole-body movements

Convergence

Spinal Flexion

Exhalation

Increased PNS activity

Shoulders forwards

Inwards arm rotation

Palms downwards / backwards

Inward Rotation of knees

Orientation: downwards and inwards

Introversion

Receptivity

Humble / inferior

Divergence

Spinal Extension

Inhalation

Increased SNS activity

Shoulders backwards

Outwards arm rotation

Palms upwards / forwards

Outward rotation of knees

Orientation: upwards and outwards

Extraversion

Expressivity / Action in the world

« High », Superior

Linking PVT patterns and movement patterns

<p>Stuck in convergence DVC, shut down, trapped, collapsed, <u>hypotonic</u> immobility</p> <p>Very low velocity Exhalation (sighing, apnea) Flat face, staring eyes, slack tongue, low/montonone voice</p>	<p>Convergence ↔ divergence Social Engagement</p> <p>receptivity ↔ expressivity demobilisation ↔ mobilisation</p> <p>calm emotional expression flowing breath, prolonged exhalation appreciative head- movements lively face (esp. upper face), relaxed jaws & lips prosodic voice</p>	<p>Stuck in divergence SNS, fight/ flight, agitation, <u>hypertonic</u> immobility</p> <p>High velocity Inhalation (gasping, apnea) Tense face, glaring/fugitive eyes, sharp tongue, loud / speedy /monotone voice</p>
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Hints for Noticing & Exploring movements

1) Develop awareness of your own movements

→ « declaration of importance of mvt »

→ We'll notice client's movements more readily

Mini-practices of everyday mindful movement

2) Mirror movement of client, tactfully

(« and when you said... you made this movement »)

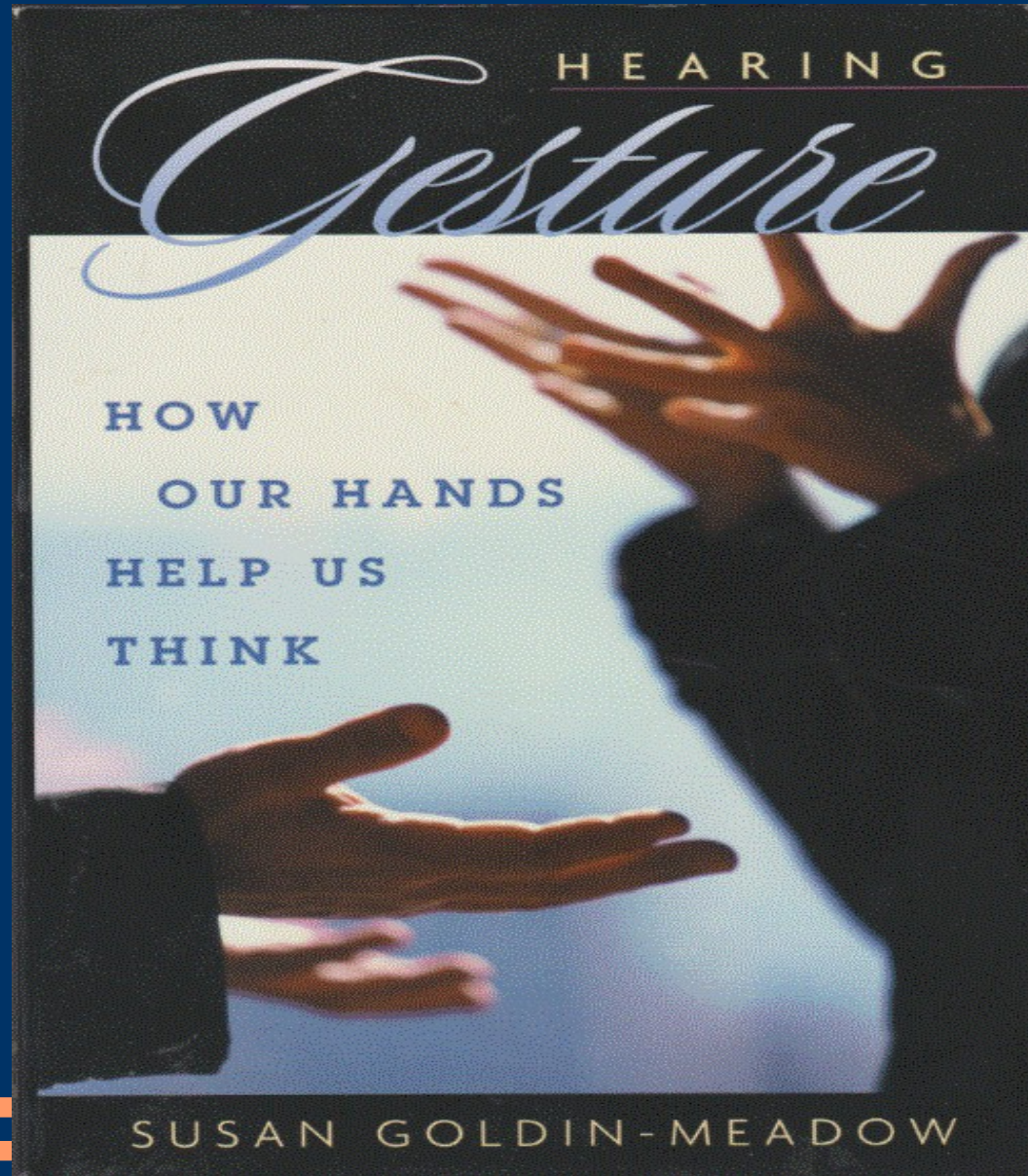
Ask client to repeat her own mvt

Ask client what shows up when she re-does this gesture with awareness

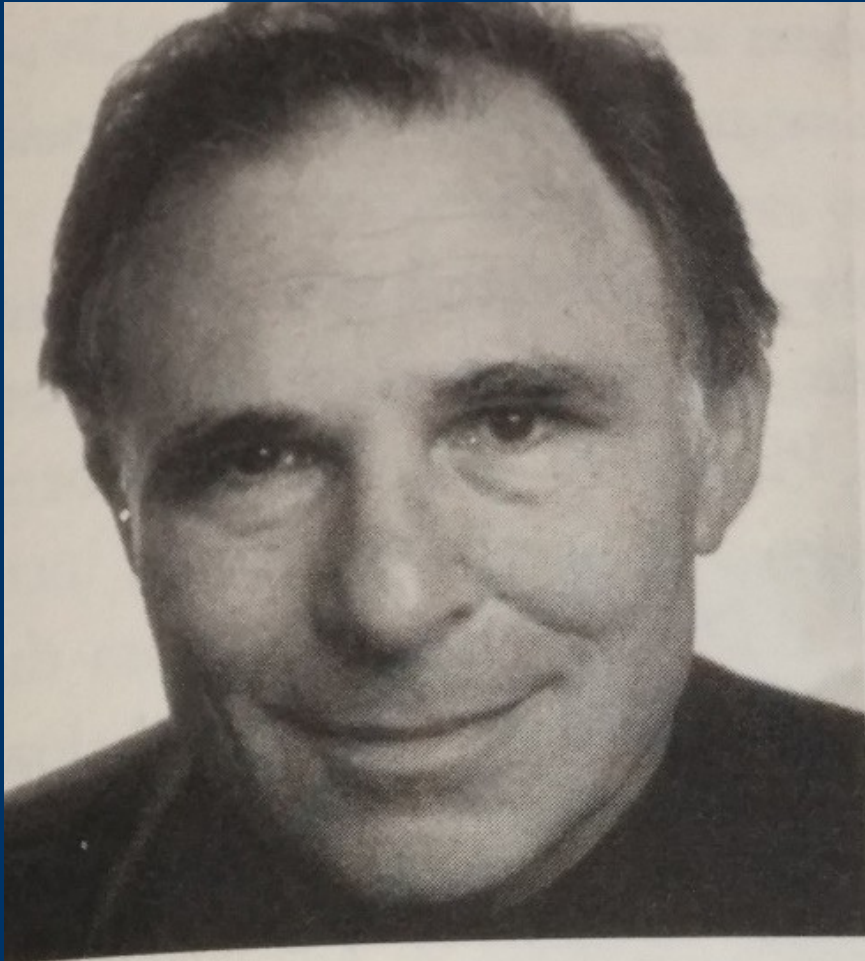
3) Of special interest : gestures that **don't match the words (see Goldin-Meadow).**



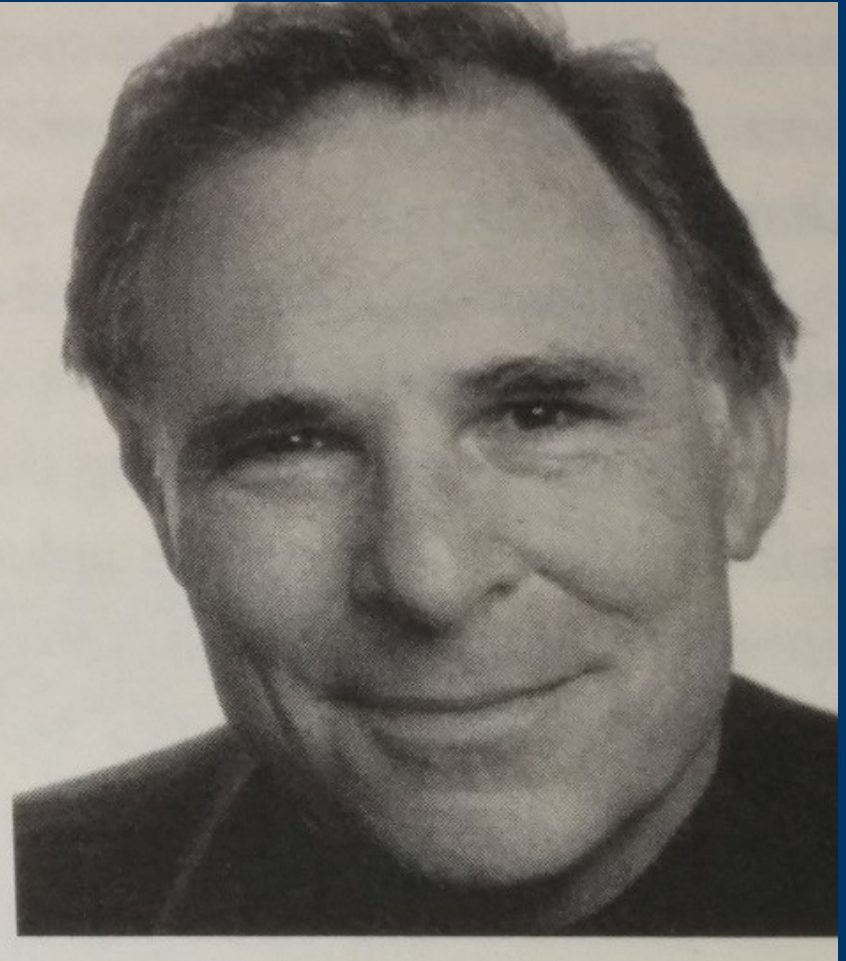
*Gestures that mismatch words : the words express the habitual perspective, the gestures a new perspective.
What if we'd focus just on the words and miss the gestures ?*



*Which one do you prefer, and why ?
(« it's the O-O, stupid... »)*

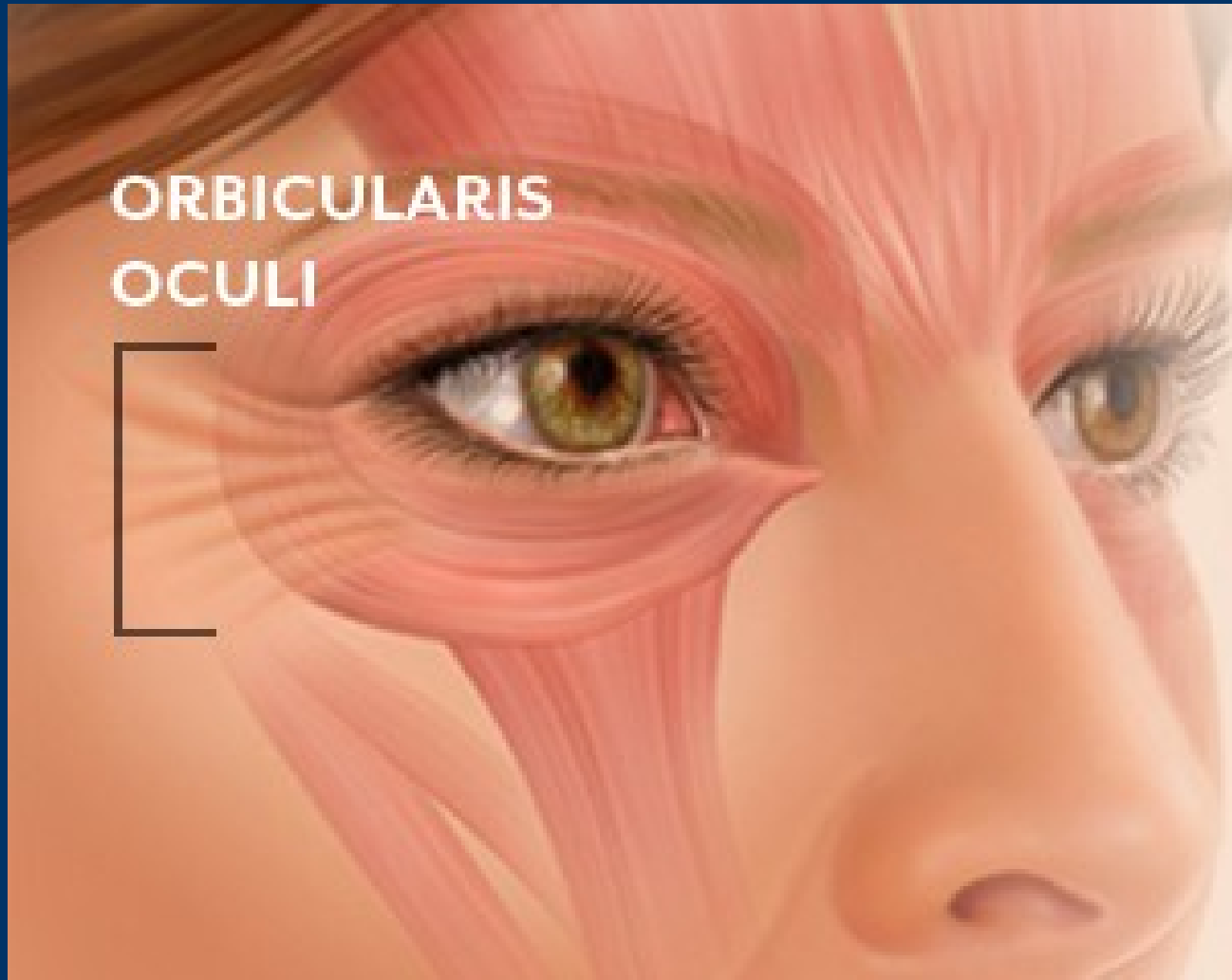


A



B

The Orbicularis Oculi
A main target for botox treatments...



***Croissants for in directly activating
the Orbicularis Oculi***



A halfsmile with « croissants »

Start by making ellipses with the tongue along or around the inside of the lips.

Notice effects, esp. in lower face

**In order to increase activation of orbicularis oculi :
imagine two « resting crescent moons » at the outside
corner of eyes**

Notice effects

**Bring this « Duchenne half-smile », as an embodiment of
benevolence, to whatever experiences you notice inside**

Hints for Evoking Movements

As a therapist, don't be afraid to move...

Gesture while speaking

Slightly mirror movements of clients

Draw client's attention to his movements

« What do you feel like doing, now ? How ? »

« In your situation, I might make this movement. »

**Elicit details of metaphors spontaneously used by client :
client will often gesture during the description**

Generic protocol for « polyvagal yoga » in one-to-one work

- 1) Identify response that has unwanted consequences**
 - 2) Choose a specific context in which this pattern manifests itself and the significant triggers**
 - 3) Co-create enough safeness, notice & describe bodily sensations**
 - 4) Elicit metaphor and/or mindful gesture that matches these sensations**
 - 5) Do the bodily practice (eg flexibly responding to feedback)**
 - 6) Notice differences in sensations**
 - 7) Elicit description of changes in metaphor and/or gesture**
 - 8) Notice how this new metaphor / gesture can inspire a new response to the «problematic» context**
 - 9) Repeat steps 3 – 8 with the consequences of this new response**
-
-

Visual convergence- divergence, flexible perspective-taking and the ANS

Convergence-Divergence, related to intrinsic eye-muscles

Seeing near - seeing far, often related to :

- Details – the larger picture
- Short-term – long term

Rapidly alternating convergence-divergence activates PNS response

Whether it will be SES or IS depends a lot on the context co-created by the therapist and the attention to bodily responses.

When conditions of activating SES are respected, alternating between convergence & divergence allows for the integration of important polarities and move beyond binary thinking.

This especially when combined with gestural work.

Examples of relevant polarities

Dangerous place	↔	Safe / peaceful place
What happened	↔	What didn't happen enough
How they treated me	↔	What they failed to appreciate
What I did, then	↔	What I couldn't do, then
Short term consequences	↔	Long term consequences
Impulsive response	↔	Valued response
Unhelpful role-model	↔	Inspiring role-model
What I want from other	↔	What I want for other
