Preamble

This is the second of four linked articles that deal with various aspects of human health and Well-Being. We all experience various ups and downs in life, and this is normal. How we deal with these – especially the downs, can greatly affect our quality of life. The four articles in this series are:

- B21: Stressors and the Stress Response – background reflections. This article deals with the dynamics of the Stress Response and updates some of the concepts discussed previously [Ross 2010 E2].
- B22[1]: A playfully sympathetic approach to the Polyvagal Theory: *An introduction to Flourishing Autogenically* (this article). The next article, B23, develop these concepts in greater detail.
- B23: Flourishing Autogenically – Pathways to Well-Being and Feeling Safe Whatever our Background. (A more detailed version of the B22 article, and embracing in particular matters concerning Post Traumatic Stress Disorder).
- B24: Autogenic Switches and Well-Being. This deals with some of the underlying dynamics that facilitate balance and harmony in those regularly practising Autogenic Training.

In this article we will be using the same notation as in the rest of the web series. Words / phrases appearing in the glossary will be notated initially in blue and underlined: e.g. Relaxation Response.

Thanks to Michael Ross and Annie Sturgeon for their most helpful proof-reading, comments, and suggestions; and to my wife Bernie for all her support, compassion, and being.

[1] The present article originated as a handout for advanced AT students who have participated in recent East Lothian AT courses – such as those in the Summer 2019 Anam Cara group – and those participating in the Personal Autogenic Training for Professionals(PATP) (developed by the British Autogenic Society).

Contents:

1. Introduction

In order to flourish, we need to feel safe. Feeling safe depends upon our underlying neuro-physiology being settled so that we feel at ease. On the other hand, trauma and distressing circumstances can rid us of a sense of Well-Being and harmony. Sometimes we may not understand why this is the case.

In this article we explore the underlying dynamics of Well-Being on the one hand, and distressed states on the other, from the perspective of three fundamental responses to the environment, that have gradually evolved over millennia. These three reactions are activated by unconscious responses to what is going on within us and outside us, and are summarised below:

a) When we feel safe (i.e. when the body-mind detects no threat) our Social Engagement System is activated.
b) In danger (i.e. the body-mind detects danger), our Flight / Fight response can appropriately be activated, to protect us.
c) In Life-Threatening situations (i.e. the body-mind detects Life-Threat) our Freeze response can prevent disaster / death.

Figure 1 depicts these three responses – and the essence of the Polyvagal Theory[2].

These three modes represent the underlying dynamics of the Polyvagal Theory developed by Porges over the last few decades [Porges 1995; 2001; 2011; 2017; Porges and Dana 2018]

Figure 1
Three Modes of Responding to our Environment

In terms of our evolution, these three responses occurred in reverse order:

i. Life Threat and the Freeze Response
ii. Danger and the Flight / Fight Response
iii. Feeling safe and the Social Engagement Response.

As mammals and humans, we have these three modes of response built into our neurophysiology. This model, based on Porges' Polyvagal Theory, has been found to be a most helpful way of looking at our responses to life and human distress from the perspective of healing and Well-Being – whoever we may be (e.g. counsellors, teachers, gardeners, construction workers, office workers, nurses or parents) [Porges and Dana 2018].

Section 2 looks at the above three responses in further detail.

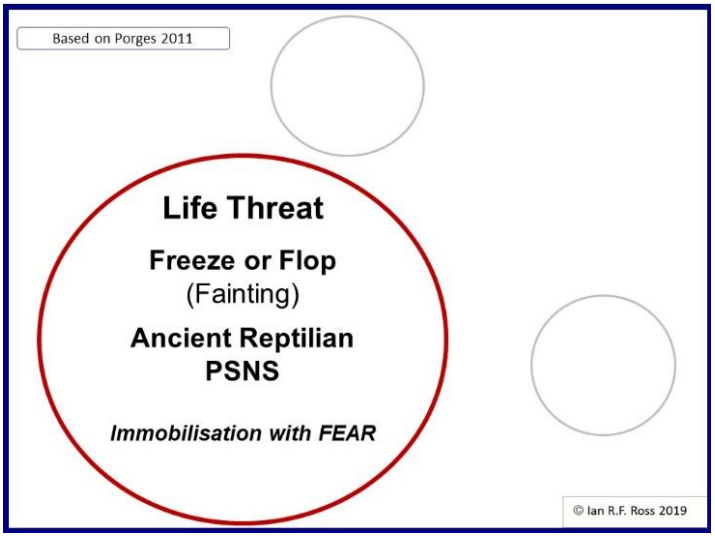
[2] Developed during the last few decades by Stephen Porges [e.g. Porges 2011].

2. The Three Responses

2.1 Life Threat

This was the first of the three modalities to develop – as reptiles were evolving. In a life-threatening situation, the reptile would freeze, and thus feign death. By appearing dead, this meant that predators might over-look or ignore them. Wild animals tend to prefer fresh food. This inbuilt, unconscious, "pretending dead" was often accompanied by reflex pooing, which also tended to deter the predator. This freeze response may at times, in humans, be better described in terms of flop or even wilt[3]. In such contexts, this response is protective.

This is the ancient reptilian response – and is controlled by an equally ancient part of the Para-Sympathetic Nervous System[4] (PSNS), illustrated in the Figure 2.1



This response, as indicated, can be summarised as:

- ❖ Immobilisation with FEAR [Porges 2017]

We humans have these ancient reptilian circuits built into our response patterns.

Note that this may be associated with fainting, as body systems are, to a large extent, shut down – so blood pressure falls.
This whole Life Threat response occurs *unconsciously*, the body's receptive systems having detected Life-Threat[5].

Figure 2.1
Life Threat Response

2.2 Flight and Fight Response

The Life Threat response, while quite effective (especially for reptiles that have (relatively) small brains), was very inflexible. In due course, there evolved the Fight and / or Flight Response to danger; this overlaps with the Stress Response. This response, in the wild, is far more flexible than the Freeze Response.

Like the Life Threat Response, the Flight / Fight system is activated *unconsciously* as a result of the detection of danger signals from outside or inside the body[6]. Figure 2.2 illustrates some of the dynamics of this response to danger.

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[3] See, for example, the woman who wrote to Stephen Porges – p 7.
[4] The PSNS is part of the Autonomic Nervous System (ANS). The ancient part of the PSNS being described here is technically the Dorsal Vagal Complex (DV PSNS).

[5] See also page 5
[6] Neuroception is the unconscious detection by the body of life threat, danger, or safety [Porges 2017], which then sets in motion the (again unconscious) response of Freeze, Flight / Fight, or Social Engagement respectively.

External or internal danger (such as recalling a traumatic memory) can unconsciously set off this response of the Sympathetic Nervous System (SNS).

Related hormones are Adrenaline, and the release of Cortisol (through the Hypothalamic Pituitary Adrenal Cortex Axis).

Associated emotional circuits are
- FEAR* and
- RAGE* [Panksepp 1998].

*Following Panksepp's practice of notating Primary Process Emotions in capitals; e.g. SEEKING; CARE; RAGE; FEAR; PLAY; PANIC / GRIEF.

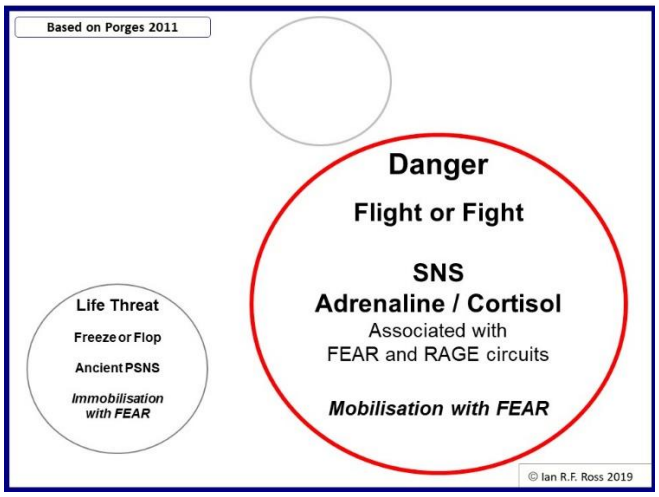
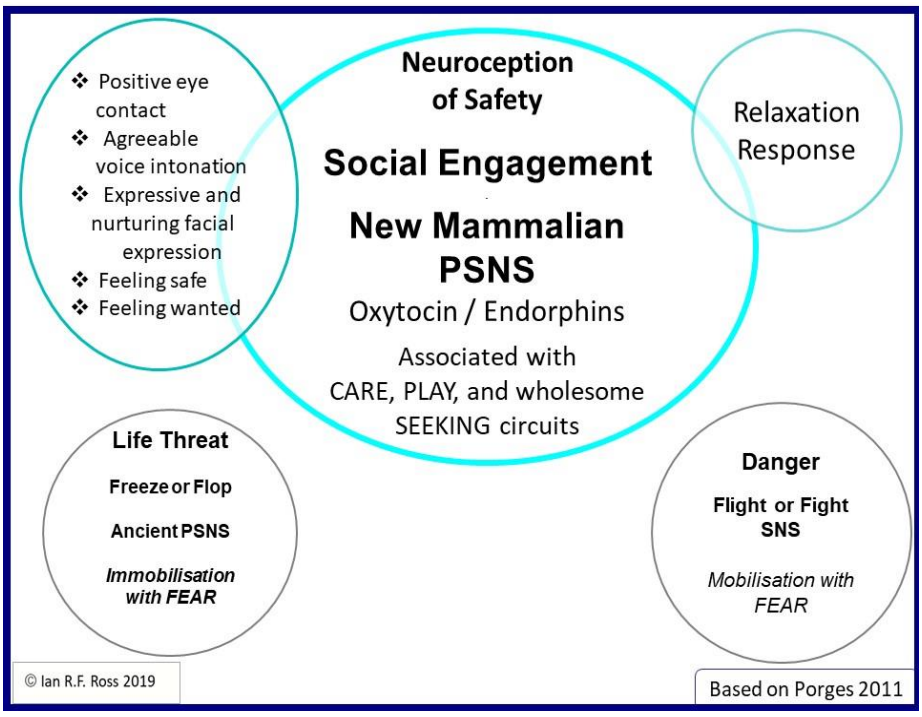


Figure 2.2
The Flight / Fight Response

2.3 The Social Engagement Response

As evolution progressed, early mammals began to evolve; these were small in comparison with the reptilian predators around, and so would have had difficulty surviving with simply the neuro-circuits existing at the time. Evolution provided the answer to this with the development of the Social Engagement System, which allowed the mammals to co-operate, and warn each other of potential dangers. This same system, linking in with CARE circuits [Panksepp 1998], also facilitates parents looking after the long childhoods of their offspring.

The Social Engagement system developed in synchrony with the New Mammalian PSNS; this new system also provides the basis for Rest, Repair, and Recuperation – and the so called Relaxation Response (but see Glossary Part II) [Benson 1975]. Figure 2.3 illustrates some of these dynamics.



If external and internal conditions are appropriate, neuroception detects safety, with the resultant Social Engagement Response.
This is associated with friendly / welcoming facial expressions and voice modulation.

Oxytocin and Endorphins are released – facilitating feeling safe / being at ease.

Figure 2.3
Safety / Social Engagement Response

The Relaxation Response is activated in various forms of meditation – including Autogenic Training. However, an "Amplified State of Consciousness" better describes the state induced by meditation and AT [de Rivera 2017B; 2017 / 2018].

3. In Health, the Social Engagement System predominates

Well-Being is associated with the Social Engagement System being active, feeling safe [Barrowcliff 2019], and thus fostering wholesome and positive communications with others.

If dangers or stressors arise, the Flight and Fight System is activated. In extreme Life Threat, the Freeze Response is activated. Both of these responses are, in the wild, healthy and protective. In our modern world, these responses may be appropriate, yet not always.

4. Severe and recurring Stressors – and post traumatic situations (e.g. PTSD)

With recurring stressors – and in post trauma situations – the Flight and Fight response, and / or the Freeze Response, may come to dominate the situation; this can result in very distressing feelings – as a result of the chronic activation of our ancient life threat response (Ancient DV PSNS), or the SNS. The symptoms that then arise may be quite different / prolonged from what we would expect in the wild (e.g. if being chased by a bear[7]); and are not helpful in terms of our well-being. Figure 4A and 4B illustrates some of these symptoms / responses.

❖ Anxiety ❖ Hypervigilant states ❖ Non cardiac chest pain ❖ Tension headaches ❖ Agitated depression
"Mobility" with Unconscious FEAR

Figure 4A

Some conditions precipitated by the long-term effects of severe trauma / stressors as a result of recurring (chronic) activation of the SNS / Flight / Fight Systems

Note: Myelinated Modern Mammalian VV PSNS ***withdrawn***

Figures 4A and 4B based on various sources including:
Porges 2017 (e.g. pp 169-198) and
Porges 2018-X pp 50-69.

➢ Wish to be alone ➢ Socially withdraw ➢ Depression ➢ Digestive problems ➢ Defaecation ➢ Disorders of subdiaphragmatic organs ➢ Feelings of helplessness ➢ Sexual problems ➢ Irritable Bowel Syndrome	➢ Hypotensive episodes that may be associated with fainting / passing out ➢ Dizziness ➢ Lack of appetite ➢ Fatigue ➢ Muscle weakness ➢ Fibromyalgia ➢ Difficulty in functioning ➢ "Give-up-itis" in context of concentration camps [Frankl 1946]
"Immobility" with Unconscious FEAR	

Figure 4B

Some possible conditions precipitated by long-term effects of severe trauma / stress as a result of recurring activation of the Ancient PSNS "Life Threat" system

Note: Myelinated Modern Mammalian PSNS ***withdrawn***

[7] For example, if we are chased by a bear, our flight response will be activated, with a great release of adrenaline. If we survive, the running will have effectively used up the adrenaline, so there is no damage per se from this (short lived) SNS activation.

It is important to recognise that the symptom complexes in Figure 4A and 4B arise from the unconscious activation of the SNS and Ancient PSNS respectively, and so are not our fault[8]. However, once we recognise that this is what is happening, we can learn to develop skills that act as antidotes to these difficulties / symptoms[9]; and in time this can prevent them arising in the first place – see Section 6.

One of the great problems if we are in a hypervigilant state is that we will tend to misinterpret the world – and other people, as illustrated in Figure 4C.

😐	*seen as*	☹
☺	*seen as*	😐 or ☹

Figure 4C
In hypervigilant states we may misperceive facial expressions

A further difficulty arises because if we ourselves are looking stressed / tense / unhappy, this can have an unconscious effect on others and may shut down their Social Engagement system, even though they are wanting to help. Figure 4D illustrates some of these dynamics.

Our face when Stressed / anxious / distressed ☹	Perceived by others as	Threatening or unfriendly; so they may feel unsafe: ➢ Their Social Engagement System is de-activated ➢ Threatening neuroception activates their SNS Flight / Fight Response

Figure 4D
When we are tense / agitated, others may begin to feel uncomfortable

We all need to be aware of these dynamics, especially parents / counsellors / nurses / doctors / teachers / lawyers etc. In order to offset such unconscious responses to others' stress, we need to become more mindful and aware. Furthermore, the awareness, recognition, and understanding of these (Polyvagal) dynamics by the client / patient can bring about a profound and healing reframe. For example, in the case of Life Threat (Section 2.1, Figure 2.1), a woman had been reading about Porges's Polyvagal Theory. Porges movingly describes the following:

> "I received an email from a woman who was in her late sixties, and she described her experiences. When she was a teenager, a person attempted to strangle her and then rape her. Many years later, she was telling this to her daughter, and the daughter asked, 'Why didn't you fight? Why didn't you do something?' The mother was embarrassed and felt shame. Then she said, 'I read about your Polyvagal Theory, and suddenly I feel vindicated and am crying now'. I was crying, too, just reading the email. But the issue was that *she understood that her bodily reaction of immobilisation was protective*. She realised on a visceral level that she felt proud of her bodily response. Her bodily reaction was heroic; she was not a victim."
>
> Porges 2017 p 176
> Italics added by IR

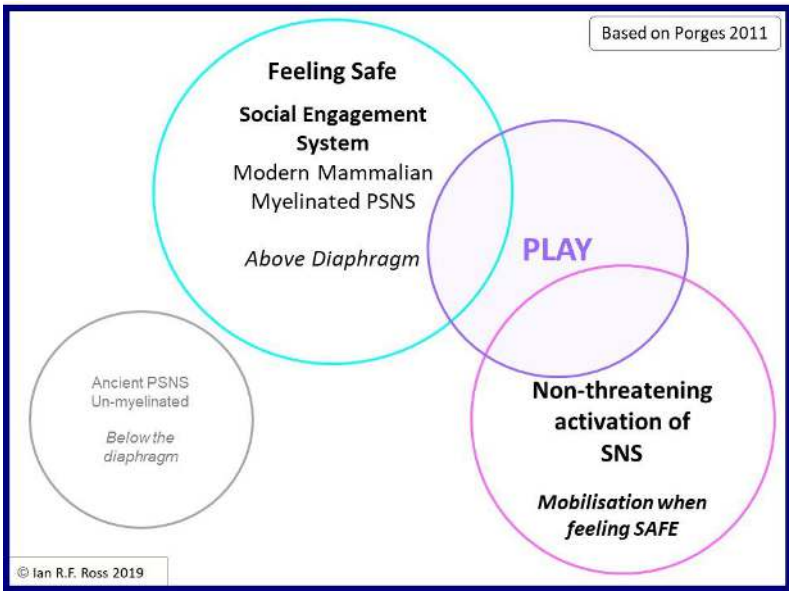
[8] Health is further compromised because the activation of both these symptom complexes tend to go in parallel with a de-activation (down-regulation) of the Social Engagement Modern Mammalian (VV) PSNS.
[9] i.e. we have a choice in the matter. See Section 6: "Before the Stimulus and the Response is a space…" [Frankl 1946].

5. Social Engagement, Play, and Intimacy

In certain situations, the Social Engagement System can remain active while either the SNS or the Ancient PSNS become active. This seems paradoxical; yet it is actually an example of the economy of nature, which can combine what in evolutionary terms were distinct and antagonistic systems into a fruitful new creation of sharing.

5.1 The Dynamics of PLAY

Real PLAY involves Social Engagement, and so the Modern Myelinated VV PSNS. Yet in play we also need energy and adrenaline, and this is possible with the simultaneous activation of the SNS, as illustrated in Figure 5.1.



PLAY involves both the Social Engagement Modern Mammalian PSNS in an integrative play with the SNS which is here *activated in non-threatening* conditions.

Porges calls this

- Mobilisation without FEAR [Porges 2011; Panksepp 1998].

An alternative framing is:

- Mobilisation when feeling safe.

Figure 5.1
PLAY circuits involve both Myelinated PSNS (Ventral Vagal) and SNS activation

Play depends on reciprocal interactions between the players. If one of the players is always winning, it loses its playfulness and fun.

5.2 The Dynamics of Nursing Mothers and Intimacy

There are some situations in which immobilisation while feeling safe is vital, such as, for example, nursing (breastfeeding) mothers and intimacy between couples. Nature has recruited the ancient unmyelinated PSNS (dorsal vagal) in synchrony with the myelinated vagal Social Engagement system for this purpose, and this is represented in Figure 5.2.

Breast Feeding and Intimacy at the neuro-physiological level are possible because of the simultaneous recruitment of both the Social Engagement (Ventral[10] Vagal) and the Ancient PSNS (Dorsal[11] Vagal) system.

This is possible because at an unconscious level there is a neuroception of safety.

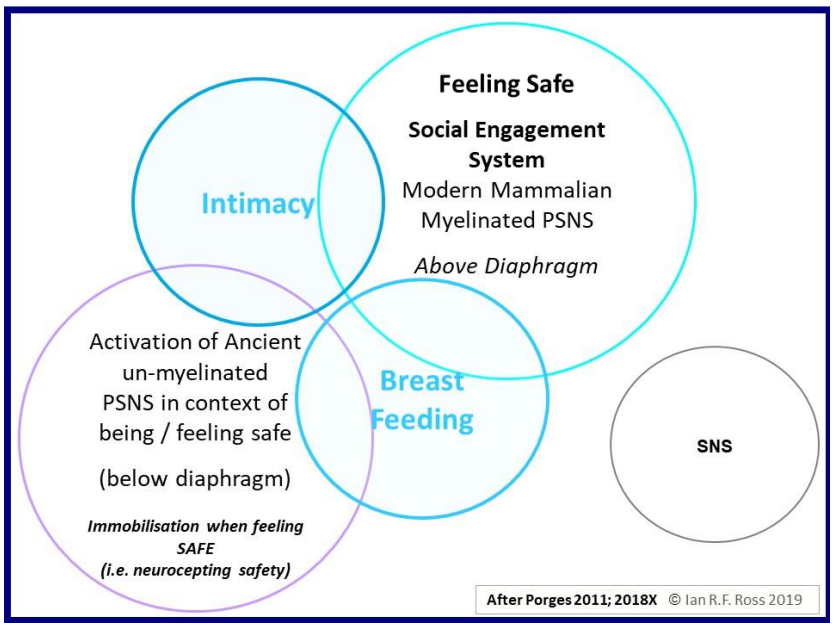


Figure 5.2
Intimacy and Nursing Mothers – *from a Polyvagal Perspective*

6. Antidotes to stressors / traumatic events

As discussed, a common outcome of trauma / severe stressors is a shutdown of our Modern Mammalian Social Engagement System, while there is on-going frequent activation of: the SNS (mobilisation in the context of neurocepted danger – i.e. activating FEAR circuits), or the DV ancient PSNS (immobilisation in the context of neurocepted life threat – i.e. activation of Life Threat circuits).

There is increasing evidence that such a shutdown can be reversed by specific therapies that can restore the Social Engagement System [Porges 2017; Porges & Dana 2018]. These include:

i. A positive Therapist – Patient / Client relationship in which the therapist has the skills and presence to facilitate the client beginning to feel safe, which implies activation of the client's Social Engagement System (i.e. the Myelinated Ventral Vagus nerve – PSNS).
ii. Meditative practices such as Meditation, Yoga, Tai Chi and Autogenic Training.
iii. Within Autogenic Training, the following are of great relevance:
    a) Regular practice of the Standard Exercises
    b) The Partial Exercises (e.g. Neck and Shoulders Warm$^{(Autogenics\ 3.0)}$ – or Heavy)
    c) The Three Minute Exercise
    d) Teaching Stories / Poems – these can result in a sudden shift to a different paradigm (see also Villoldo 2006)
    e) Physical Autogenic Exercises – that is, the series of EARTE exercises [Expressive Autogenic Resilience Training Exercise, that include: PLUE; MGERNA; and PLAY-CROE (was OLE-CROE). See Appendix II.
    f) Feeling the Feeling Meditation
    g) Constructive Feeling Meditation

iv./

[10] Ventral: relating to the front part of the body [from Latin: Ventralis… Abdomen – CED].
[11] Dorsal: relating to the back or spinal part of the body [from Latin Dorsalis…. Dorsum: back – CED].

iv. Being in nature [e.g. Barton et al 2009]
v. Fostering and developing a positive attitude associated with life-enhancing emotions such as gratitude, wonder, nurturing (self and others) and zest for life [Bryant 2007; Stellar 2015; Graham 2018]
vi. Fostering and developing creativity

All of these can be seen as appropriate and skilful responses to various situations / stressors that we experience. Victor Frankl's[12] statement some decades ago remains relevant – especially in these troubled times at the beginning of the 2020s.

> Between the stimulus and the response there is a space. In that space is our power to choose our response. In our response lies our growth and our freedom.
>
> Victor Frankl

"In our response lies our growth and freedom." Our brains are plastic, meaning that we can change our responses whatever we have previously been through, whatever traumas have afflicted us. The above quote is incomplete, and Frankl goes on to say, crucially:

> The last of human freedoms is to choose one's attitude in any given set of circumstances.
>
> Victor Frankl

Here Frankl is also referring back to the concentration camp he was in during the early 1940s, when more or less every other freedom had been denied the inmates. Holding on to negative feelings, including attitudes of hate and blame, are not conducive to recovery and healing. So whatever has happened to us, the key to recovery is our attitude to what has happened – and to replace an overall negative narrative about the experience / event with a positive one – including, for example, what we can learn from the experience, including what we might do differently in the future. In this way we are re-wiring the traumatic / negative and disabling neuro-circuitry with positive and life enhancing neuro-circuitry. Such approaches will strengthen our ability to deal with traumas, and so increase our resilience[13].

These new approaches are now backed up by neuro-science of the last few decades. Yet such approaches have been implicit in psychotherapy for a long time, and are reminiscent of the ancient teaching of Changing the Peg.

7. Epilogue

[12] Victor Frankl was a survivor of one of the concentration camps in the Second World War, and went on to develop Logotherapy and write "Man's Search for Meaning".
[13] For an excellent introduction to such approaches, see Graham 2018.

7. Epilogue

This article has given a brief introduction to the Polyvagal theory and its relevance to our human well-being. The Appendix I below gives, in tabular form, an overview of the theory from a neuro-physiological perspective. The subsequent Appendix (II) provides instructions for some Expressive ART Exercises that can dissipate tensions and distress – some of which purposely embrace playful approaches.

An understanding of the true nature of the Autonomic Nervous System gives us greater insight into human distress and trauma (e.g. PTSD), in addition to play and intimacy. The next article in the series, B 23, goes into these dynamics in greater detail, especially regarding trauma and PTSD.

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8. Appendix I /

8. Appendix I

A summary of some of the neurophysiological dynamics of the Polyvagal Theory

A brief description	Type of Response	Autonomic Nervous Systems involvement and Primary Process Emotions (notated in CAPITALS)	hormones	comments
Immobilisation with fear **Freeze**	**Life Threat**	Dorsal Vagal System (Unmyelinated PSNS) Below the diaphragm (sub-diaphragmatic)		Can protect us from life-threatening situations. Basic shut down of our systems. Can lead to dissociation, and Post Traumatic Stress Disorder.
Mobilisation with fear **Flight** **Fight**	**Danger** Classic Stress Response	Sympathetic Nervous System Adrenaline (catecholamines) released from Adrenal Medulla FEAR RAGE	Hypothalamic Pituitary Adrenal Axis….leading to release of Cortisol from Adrenal Cortex.	Cortisol damaging if stressors prolonged Chronic Stress Response can lead to: • *Hypervigilant States* and • *Medically Unexplained Symptoms (MUS)*
Social Engagement	Safety Feeling Safe "Relaxation Response " Motivation to socially engage	Ventral Vagal system (Myelinated PSNS) Above the diaphragm (supra diaphragmatic) CARE Nurturing Intimacy SEEKING (Positive) Companionship / safety / meaning	Oxytocin Endorphins Note: Playfulness [PLAY] utilises a dance between the Ventral Vagal and SNS	Essential for the development of human societies. Facilitates cooperation, wholesome communication and compassion Ability to empathise; to see the other's point of view – facilitated by feeling safe Allows space and time for self to rest / recuperate
Mobilisation when feeling safe PLAY	PLAY and playful physical interactions	Modern Mammalian Ventral Vagal PSNS (myelinated) Combines with SNS when no danger; i.e. SNS activated when feeling safe	Oxytocin and Endorphins Adrenaline	Associated with: CARE; PLAY and wholesome SEEKING [Panksepp 1998]
Immobilisation when feeling safe *a) Nursing Mother* *b) Intimate relationship / union*	Nursing Intimacy	Modern Mammalian PSNS Myelinated Ventral Vagal CARE; SEEKING Combined with: Ancient Reptilian PSNS i.e. Unmyelinated Dorsal Vagal within a Social Engagement context	Oxytocin Endorphins	CARE; (PLAY) and wholesome SEEKING [Panksepp 1998]
				© Ian R.F. Ross 2020 Based on Porges 2011; 2017

Appendix I: Figure 8
A summary of some of the neurophysiological dynamics of the Polyvagal Theory

Appendix II /

9. Appendix II

Expressive ***A****utogenic* ***R****esilience* ***T****raining* Exercises

Introduction

Luthe introduced what have become known in the British Autogenic Society as the *intentional* Off-Loading Exercises (*i*OLE). These are not to be confused with the Intentional Formula[14] described in Figure 1, page 2, of the first of the six volumes on Autogenic Training [Luthe and Schultz 1969]. Luis de Rivera prefers the term De-blocking exercises rather than Off-Loading Exercises for those that deal with blocked anger, anxiety, and loss. Professor de Rivera, who worked with Luthe for some years in North America, specifies that the *i*OLE dealing with Anger, Anxiety, and Loss ("crying" exercise) should not be taught or practised routinely in AT, and that they are best only considered when there is clear evidence of the relevant emotions being blocked.

The above considerations are best seen in the light of de Rivera's general approach to AT and, specifically, with his teaching of two types of Meditation exercises dealing with feelings:

- Feeling Meditation [de Rivera 2018 pp 107-128] (Feeling the Feeling Meditation)
- Meditation on Feeling [de Rivera 2018 pp 129-145] (Constructive Feeling Meditation)

The two terms Feeling Meditation and Meditation on Feeling can be confusing in English, and so I notate them as Feeling the Feeling Meditation and Meditation on Constructive Feelings respectively. (For further details, see F5A and F6 series on website.)

Having read de Rivera's book [de Rivera 2018] and some of his other articles – and heard some of his talks, I have developed a somewhat different approach to the formal BAS teaching, and have come up with a series of (generally physical) exercises that often embrace an element of play and PLAY-fulness, called:

- **E**xpressive ***A****utogenic* ***R****esilience* ***T****raining* **E**xercises, or EARTE for short.

In general, the EART Exercises are of particular significance when refracted through the Polyvagal theory, as they potentially move us through from SNS domination that may be associated with bodily tensions (for example arising from fear / anger), to one of PLAY-full release – modulated through the myelinated Ventral Vagal system – and so towards Social Engagement and feeling safe.

Here we will cover just two of these exercises; for further details of other EARTE exercises, please see the companion article B23 and / or contact me direct.

[14] Which became notated by the British Autogenic Society as Personal and Motivational Formula.

Appendix II continued

EARTE Exercise: example 1

Mini General Exercise for Reducing Negative Affect [15] ***(MGERNA)***

This exercise was introduced to me in the 1990s by Hetty McKinnon, an Autogenic Therapist in Glasgow, who at the time was my tutor / supervisor. It is a very good example of a physical releasing exercise that combines different aspects of our Autonomic Nervous System in such a way as to foster healing and well-being[16]. At that time I had not heard of the Polyvagal Theory.

Normally, I introduce this exercise in Session 2 or 3 of an Autogenic course, with the name:

- *Mini General Exercise for releasing distressing feelings; or just for fun (MGERNA)*

The distressing feeling may be, for example, irritation with our boss, partner, or self.

1.	Stand up with feet slightly apart	Possible accompanying ANS dynamics
2.	a) Raise both arms vertically above the head; b) Raise one foot above the ground (so that the thigh is nearly at a right angle to the body); c) Bring your hands / fists down – at the same time as stamping the raised foot……. d) ……while letting out a *loud roar – or any sound you like.*	Could be SNS dominated mode in context of "mobilisation with FEAR"; or mobilisation while feeling safe and in playful mode. "Mobilisation for Fun"
3.	Repeat 2 above twice more.	
4.	Then repeat 2 and 3 but with the other leg.	
5.	*Now:* • Bring your hands / fists to the front of your chest (breastbone / sternum); and firmly press them (the knuckles) together as you breathe in deeply. • Then throw your arms out, with a wonderful release of: Ahhhhhhhh; • And at the same time, a smile can embrace our face.	SNS modality in context of mobilisation with fun[17]; overlapping with PLAY and Social Engagement of Myelinated VV PSNS
6.	Repeat 5 once more, in a PLAY-full manner.	
7.	Notice how you respond and how you feel during and after this series of exercises.	Myelinated VV and hemispheric integration
	Sources include Hetty MacKinnon, Glasgow, 1990s	

Appendix II: Figure 9A
MGERNA
Mini General Exercise for releasing distressing ("negative") feelings; or just for fun

[15] Or Distressing feelings
[16] In this respect it is a very good example of an Autogenic Approach that is fundamentally informed by Polyvagal and Autonomic principles.
[17] Porges's phrase is "mobilisation without fear". However, I have here reframed it in the positive statement of "mobilisation with fun" – implying a playful and almost impish element.

Appendix II continued

EARTE Exercise: example 2

This particular exercise is recommended by Peter Levine in his book: "In an Unspoken Voice" [Levine 2010]. If focuses on our outbreath with the intonation of "Vooooo". (Here the 'o' is soft, as in the 'ou' of you, rather than the 'o' of 'oh'.)

i. Take a gentle full breath in;
ii. on the outbreath, intone "Vooo" – allowing it to emerge from the tummy area .....
iii. at the end of the breath, pause briefly;
iv. allow the lungs to fill, and then
v. gently repeat the Vooo on the out breath till all the air is out.
vi. Repeat this sequence several times.
vii. Then rest, and gently reflect on feelings in body, mind and emotion.

- ❖ We can become more in touch with the origins of this Vooo sound by placing one hand on the tummy, and the other on the chest, as we breathe out.
- ❖ Notice how this feels.

Appendix II: Figure 9B
EARTE: Vooo Exercise
Sources include: Gaynor 1999; Levine 2010

This exercise can directly stimulate the myelinated VV PSNS, partly by the known effect of an extended outbreath increasing Heart Rate Variability. One of my recent AT patients uses this in preference to one of the standard AT Partial Exercises.

10. Thematically Related Articles /

11. Thematically Related Articles on Website

(or at present works in progress)

www.atdynamics.co.uk

B5	Emotions, Frontal Lobe Dynamics, and Autogenic Training in the context of autonomic afferent lateralisation (2014)
B18	The Space to Choose – reflections on the gap between the stimulus and the response(2014; after Frankl)
B19	Reflections on a Secure Base (2017)
B20	Separation Distress and Well-Being – *Neuro-physiological reflections on developing a Secure Base* (2018)
B21	The Stress Response and Balance This article deals with the dynamics of the Stress Response and updates some of the concepts discussed previously [Ross 2010 E2]
B22[18]	A playfully sympathetic approach to the Polyvagal Theory: *An introduction to the concepts of Flourishing Autogenically* (B23)
B23	Flourishing Autogenically – *Pathways to Well-Being and Feeling Safe Whatever our Background*. (A more detailed version of this present B22 article, and embracing in particular matters concerning Post Traumatic Stress Disorder.)
B24	Autogenic Switches and Well-Being. This deals with some of the underlying dynamics that can facilitated balance and harmony in those regularly practising Autogenic Training (this article)
D4	Duhkha, Impermanence, and Inter-relatedness (2012)
C2	Mindsight – *our seventh sense and associated pre-frontal cortex functions* (2010-2011)
D-03	Look at the Cypress Tree (2015) (short version)
D-11	Sukha: Paths of Well-Being, PSNS Afferents, and Inner Warmth: from Duhkha to Sukha (2017)
E-03	Look at the Cypress Tree – *Autonomic Afferents and Well-Being* ○ Background Research Paper for talk given to the British Autogenic Society Annual Lecture London - 21st May 2016 (extended version of D-03)
F 1	A general introduction to Autogenics 3.0 *(based on the work of Luis de Rivera)* (2018)
F 4	Some Consequences of Blocking Feelings – *of not allowing ourselves to feel the feeling* (2019)
F 5A	Feeling the Feeling Meditation I (2019)
F 6.1	Constructive Feeling Meditation I: Calm (2019)
F 6.2	Constructive Feeling Meditation II: Existence (2019)
F 6.3	Constructive Feeling Meditation III: Zest (2019)
F 6.5	Constructive Feeling Meditation V: Inter-Being
F 7	Meditation on Five Sounds that can Heal the World (2019)

11. Glossary

[18] i.e. this present article

11. Glossary

Amplified State of Consciousness Induction (ASCI) (Imported from Glossary of B 24 in the series)	A concept originating in de Rivera's work indicating that different forms of meditation all result in (induce) an Amplified State of Consciousness; hence ASCI. This is a much more profound change than the "Relaxation Response" per se. "ASCI principle: passive concentration induces an Amplified State of Consciousness. ○ Benson´s Relaxation Response is identical to the autogenic state described by Schultz and co-workers, so we could name this principle the Relaxation Principle. ○ I prefer ASCI (Amplified State of Consciousness Induction) because it conveys better the notion that, besides the psychophysiological changes, there is an amplification of: a) the mental field, b) inner world perception and c) self-discovery. ○ The Standard Exercises work on this principle." [de Rivera 2017 /2018B] Bullet points etc added - IR
Autonomic Nervous System (ANS) See also the Relaxation Response Part II	The Autonomic Nervous System has, historically, been divided into two fundamental parts, that of the Sympathetic Nervous System (SNS) that deals with danger in the context of the flight / fight response; and the Parasympathetic Nervous System (PSNS), which facilitates Rest, Repair and Recuperation. ○ However, this is not the full story, and this present article has looked at the ANS in the context of the Polyvagal Theory, a summary of which appears in this Glossary on pp 17-18.
Changing the Peg Adapted from E-03 on web	A concept from Buddhist psychology. It is suggested that negative mind states, including both destructive and negative emotions, can best be overcome by changing our inner mental state to one of a positive emotion / affect (Hanh 1998 pp 207-209). This switch in our mental state is called changing the peg. Interestingly, Spinoza developed a similar concept in which he stated that we can only overcome a negative affect not by reason alone, but by "reason-induced-emotion" (Spinoza 1677; Damasio 2003 p 11-12; Ross 2005X p 30-34). ○ Studies in neuro-science support this concept; positive affects tend to act as anti-dotes to the informational substances associated with such negative mind states as anxiety, grief, and anger (Panksepp 1998; Ross 2005X p 31-32). ○ In addition, meditation, and so by extrapolation the AT state, activates the Left Frontal Lobe (pre-frontal cortex) region of the brain, and this in itself reduces amygdala activity (especially fear / anxiety circuits) and dissipating any pre-existing negative affect (Davidson 2003B pp e.g. 180--338; Ross 2005X; Ross 2010 pp 147-149). *Origins of concept* As indicated above, "Changing the peg" is an ancient practice / metaphor for the concept of dealing effectively with negative mind states / afflictions. In rural / nomadic societies, if a peg (e.g. a tent peg) became rotten or damaged, it would be replaced by a carpenter with a new and wholesome peg. In the same way, if we are suffering from a negative / unwholesome affect, it can be overcome by

	replacing it with a positive wholesome affect – in the context of Meditation and Mindfulness (see also Graham 2018 p 61). Changing the peg can also give us new insights and a new meaning to life.
Dorsal Vagal Complex DV PSNS	In this article Dorsal Vagal is used specifically in connection with, and in the context of, the ancient unmyelinated PSNS (see Polyvagal Theory). Dorsal Vagal actually refers to the Dorsal Vagal Nucleus in the brain where the ancient PSNS nerve network originates [Porges 2011], and is referred to as the DV PSNS. ○ The DV PSNS distribution in primarily to sub-diaphragmatic regions, including the organs of the abdominal cavity. ○ This whole system is also known as the Dorsal Vagal Complex. ➢ Also referred to as the 'vegetative' PSNS. ○ It is activated when the organism neurocepts (see neuroception) a life-threatening situation, and can be associated with a very marked slowing of the heart (extreme bradycardia). ➢ While in reptiles this can be lifesaving, in mammals it can be highly problematic – as the lowered heart rate can result in dangerously low, and potentially fatal, levels of oxygen in the brain.
Heart Rate Variability (HRV)	The heart rate varies slightly with breathing: ○ The inbreath is associated with slight speeding up of the heart (SNS modulated); ○ The outbreath with a slight slowing of the heart, brought about by the influence of the myelinated vagal efferents (to the heart). HRV increases when we are relaxed, and it is in effect an indirect measure of (VV) PSNS activity; the greater the HRV, the more PSNS activity is going on in the body. Longer outbreaths, which can be consciously induced, tend to increase HRV, and this is sometimes suggested to facilitate relaxation. ○ In the context of Autogenic Training Standard exercises, this is probably problematic as one of the vital elements of the AT sequence is that we are not actively trying or striving to do anything.
Logotherapy	A form of psychotherapy developed by Victor Frankl in Europe after the Second World War (1939-1945). The literal translation is: "healing through meaning", and is sometimes considered the Third Viennese school of Psychotherapy (the First being Freud and the Second Alfred Adler). In essence it was a "meaning-centred school of psychotherapy" based on the premise that the "primary motivational force of an individual is to find a meaning in life." Quotes from: https://en.wikipedia.org/wiki/Logotherapy on 30-iv-2020. Meaning was also a central tenet of Jung's psychology [Jung 1933; 1937].
Myelin (myelinated)	Myelin sheaths cover some nerves, and the sheath allows the neuronal impulses to be conducted much faster. The VV PSNS is myelinated, and this facilitates, for example, Social Engagement [Porges 2011]. ○ By way of contrast, the DV PSNS is unmyelinated.
Neuroception	Neuroception is, in essence, the unconscious detection by the organism of bodily states; for example: ○ life threat, ○ danger, or ○ safety [Porges 2017], …….. ……which then sets in motion the (again unconscious) response of Freeze, Flight / Fight, or Social Engagement respectively.

Polyvagal Theory Adapted from Glossary of B 24	The Polyvagal Theory has been developed by Porges over the last four decades or so. In essence, it can be described in terms of three components of the Autonomic Nervous System. 1. **The Primitive and** *unmyelinated* **(Dorsal Vagal) PSNS** dating back to the evolutuion of vertebrates. This is the system that operates unconsciously when an organism is severely threatened and "feigns death" / freezes or flops, and is associated with behaviour shutdown, thus acting as a primordial survival system. • It is in essence a Pan-Immobilisation System when under severe threat (i.e. Life Threat), and sometimes is called Fear Paralysis [Levine 2010]. • The primitive PSNS evolved in evolution in the context of Immobilisation associated with unconsciously perceived (neurocepted) life threat. • This system worked well for reptiles, but is potentially lethal for mammals – as the shutting down of systems can threaten the integrity of the mammalian brain which is very sensitive to reductions in oxygen supply. 2. **The SNS flight / fight system**. This is in essence the Mobilisation system – e.g. when we are in danger. • Mobilisation with fear – for either fight or flight. 3. **The Myelinated (Ventral Vagal) PSNS** that evolved in mammals and is fundamental to Social Engagment / Social Communication. This involves, for example: ○ Facial Expression ○ Listening ○ Vocalisation This myelelinated vagal system can only operate properly in situations where we are feeling safe. ○ Myelin covers nerves and allows the neuronal messages to be transmitted much faster than is the case with unmyelinated nerves.
Relaxation Response Part I *Classical description*	The Relaxation Response is associated with rest, repair, and recuperation – and increased VV PSNS activity, and was studied extensively by Herbert Benson (Benson 1975; 1985). ○ Benson's original research showed that meditative type approaches (which he re-named the Relaxation Response), resulted in, for example, reduced heart rate, reduced blood pressure, reduced oxygen consumption, reduced muscle tension and increased alpha wave activity on EEG. For further details, see glossary of B 24
Relaxation Response Part II *Concept re-assessed based on Sadigh 2020*	The above description has been the conventional wisdom for several decades, and has a value when being contrasted with the Stress Response. However, Micah Sadigh challenges the perspective of the Relaxation Response with sound arguments, which embrace the following: i. Individual human cells are never at rest, never "relaxing". ii. During the Stress Response, they will be in a Catabolic Mode, meaning that they are expending energy for a particular purpose – e.g. the flight or fight response. ○ Catabolism: the break-down of complex molecules with the release of energy – as required when, for example, we are digging for potatoes or climbing stairs. Catabolism is active to the flight / fight response.

	iii. When the Stress is over, the cells go into Repair Mode. In this Repair Mode the cells are still active in that they are restoring the milieu within the cell back to equilibrium – that is, the Anabolic Mode. ○ Anabolism: the metabolic process that includes the building up of simple molecules to more complex molecules, some of which will be stored as a future energy reserve. This will also involve repair and restoration of the cells following energy expenditure / stressors. iv. From this perspective, it is perhaps more accurate to describe this state as the Repair and Recuperation mode (rather than the Relaxation Response). Rest may of course be involved in this by the individual who has had a tiring day, yet this "rest" is more to allow the cells to restore themselves, some of which may have been damage by the stressors of the day. ○ This being the case, it is perhaps inappropriate to discuss Autogenic Training in terms of the "Relaxation Response". Rather, AT embraces the repair and restoration mode, yet it also can embrace the induction and maintenance of an Amplified State of Consciousness – ASCI [de Rivera 2018]. A more appropriate term for the Relaxation Response may be the Restoration Mode. Whichever term we use, both are deeply rooted in the VV PSNS dynamics of the Polyvagal Theory.
Restoration / Repair / Recuperation Mode	Micah Sadigh argues that the term Relaxation Response is inappropriate and misguided (see Relaxation Response Part II above). ○ The Relaxation Response is not associated with the cells of our body "resting"; rather, they are repairing and healing themselves – an active intracellular process [Sadigh 2020]. Autogenic Training facilitates rest, repair and recuperation of the cells within our bodies. AT also facilitates an Amplified State of Consciousness Induction, crucial for more meditative aspects of AT [de Rivera 2018].
Stress Response See also glossary of B 24 for a more in-depth account including Allostatic Load	As originally conceived by Walter Cannon (Cannon 1936), the Stress Response is the set of adaptive biological systems that enable an organism to return to homeostasis following a physical / environmental challenge. cf. The Relaxation Response [Benson & Klipper 1975]. ➢ Notwithstanding Cannon's concept, the Stress Response, if prolonged or very severe, can lead to long term physical and mental damage / distress – sometimes referred to as Allostatic Load [McEwen 1998; McEwen & Lasley 2003].
Vagal Brake See also Dana 2018 pp 28-31	The vagal brake is modulated through the Ventral Vagal Complex (VV PSNS) and slows the heart, especially in expiration [See Heart Rate Variability]. The intrinsic rate of the heart is faster than our normal resting pulse, which is normally slowed by the vagal brake. ○ If potential danger is neurocepted, the vagal brake is gently released, with a speeding up of the heart rate, and the SNS flight / fight system is alerted, without any release of adrenaline / cortisol. ○ If it turns out that there is no real threat, the vagal brake is re-applied, the heart slows, and we quickly return to our social engagement modality. ○ On the other hand, if there is real danger, the vagal brake is fully released and:

	a) the already alerted SNS flight / fight response is switched fully on, b) our heart rate goes up even more, and c) adrenaline and cortisol are released.
Ventral Vagal Complex VV PSNS Also known as the "smart vagus" thanks to its vagal brake modality in the context of a neurocepted threat.	In the context of this article, this is usually referring to the VV PSNS, the newest part of the PSNS that is involved in, for example, facial expression, making eye contact, voice intonation, displaying "contingent facial expressions", and social engagement [Porges 2011]. ○ The Ventral branch of the PSNS originates in the Nucleus Ambiguus in the brain, and, being myelinated, conducts neuronal messages much faster than the 'vegetative' DV PSNS. Ventral Vagal Complex embraces the entire myelinated VV PSNS. The main areas of action of the VV PSNS is on those organs / parts of the body above the diaphragm – supra-diaphragmatic. In the context of Social Engagement, it also plays a subtle role in modulating the initial SNS-driven flight / fight response when possible danger is neurocepted. The VV PSNS normally slows the heart (vagal brake), but in situations of potential danger this vagal brake is lifted, speeding up the heart rate prior to any increased SNS activity. ○ If the "potential danger" is subsequently neurocepted as "no danger" (as say in PLAY), then the vagal brake is re-asserted, the heart rate slows, and social engagement resumes in the context of feeling safe. ○ If real danger is neurocepted, the vagal brake remains lifted (with the associated increased heart rate) and the SNS flight / fight response comes into action *with the additional SNS-driven speeding up of the heart.*
Well-Being	A sense of Well-Being is not possible if our Autonomic Nervous System is out of balance. In particular, if there is inappropriate increased activity of our SNS / DV PSNS. On the other hand, regular activation of our VV myelinated PSNS facilitates Well-Being and wholesome Social Engagement [Porges 2011]. For a fuller discussion, please see the Glossary entry of the thematically related article: ❁ B-24: Autogenic Switches and Well-Being

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