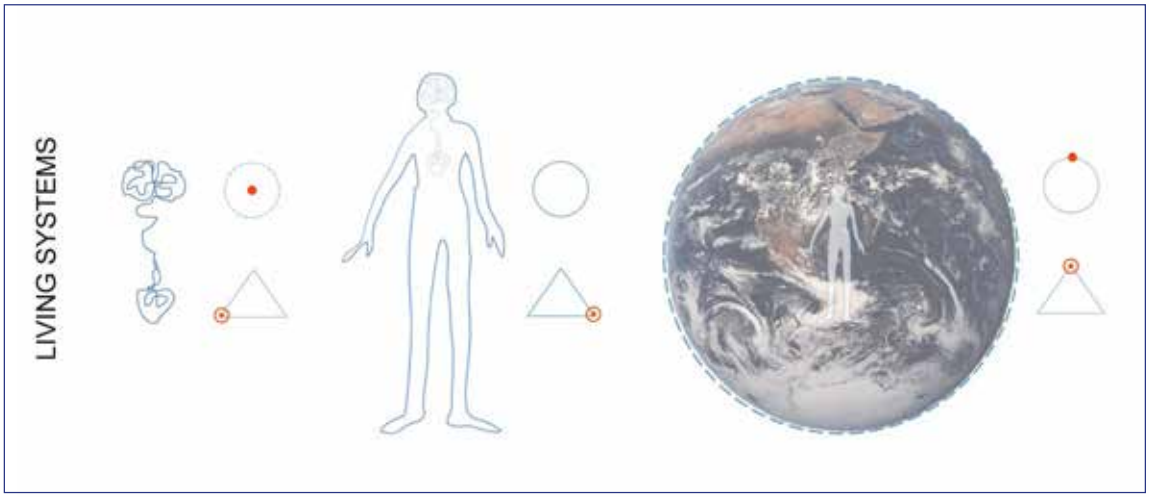
Traumas and social sustainability

Rehabilitation inspired by the complex systems of nature



Excerpt from work with traumas and rehabilitation – SYNerGAIA, Denmark

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Social Sustainability – on Adaptability and Resilience

Rehabilitation inspired by the complex systems of nature.

"In a nutshell, nature sustains life by creating and nurturing communities … and what is the resilience of these ecological communities? How do they react to outside disturbances? By flexibility and diversity – the more variables are kept fluctuating, the more dynamic the system is, the greater is its flexibility. "

Fritjof Capra and Pier Luigi Luisi, The Systems View of Life, 2014

When human beings are affected by trauma, stress, and other dysfunctions, our adaptability is weakened. The natural routine of transforming disturbances freezes.
Based on experience, the following is grounded in the theoretical, as well as the foundational idea, that traumas and dysfunctions are expressed in various natural ways. Taking our point of departure in the inherent resources of the individuals and systems in question, we shall in the following introduce some modes in which one can address such traumas – as a subject, in families/groups, and as society. The basic concept is that the traumatized individual and families have the necessary resources to create small changes in their daily lives. The method and the training focus on discovering the already existing resources, and then applying them.

An important factor in the rehabilitation and the restoration of balance to human beings is to understand, what goes on in the body, in the nervous system, and hence in the mind – in daily life. Via theory and knowledge-based training of the professional, he or she is introduced to a practice in systemic trauma work, focusing on a process that leads from dysfunctions to stabilization and change.
The focus is on the rediscovery of the ability to live your life in a dialogue with challenges – being able to work with internal and external vulnerability and resistance – central elements in the cultivation of robustness and resilience. A resilient human system is able to resist tremors and shock, and subsequently regenerate.
The visible signs of changes and sustainability are that the individual begins a process – and realizes that he or she is developing new resources. The individual is in such a process upgraded to give and receive feedback, and becomes capable of identifying and voicing the desired changes.

"The disorganizing effects of traumas and their insolubleness are transmitted from generation to generation. The emotional suffering, the stress-related damages to the cognitive functions, the inner chaos of overwhelmingly explicit memories, and the potential interpersonal violence caused by traumas result in various types of destructive behavior, that spreads like rings in water, transgressing the borders of time and human life".

Daniel Siegel

Holistic Understanding of Trauma: Cross-disciplinary Theory and Practice

A trauma is a psychophysiological reaction that can occur when a human life is endangered or when an individual experiences a situation, where his or her life is at stake. The situation may occur in accidents, natural catastrophes, war, assault, torture, rape, etc. Traumatization may also occur, when you, as a next of kin, witness such violent events. Trauma research, including the PTSD-diagnosis, shows that traumas can manifest on all levels in a human life.

When you look at the manifestation of the trauma in a phenomenological perspective and identify central aspects, then you find that:

The trauma influences the entire human being. This means that it affects the individual's experience of being in the body, being absorbed in emotions and thoughts. Moreover, his or her abilities to offer attentive presence, take care of him- or herself, and develop relations with others are affected.

Trauma isolates – the individual is isolated from the group (and to a great extent also from aspects of the self!). The traumatized individual is exposed existentially by weakened confidence in self and others, and in the world. The resulting effect is social withdrawal and isolation, which to the surroundings and particularly the family has serious consequences.

The trauma affects time – i.e. the relationship between present, past, and future. In the context of the daily existence in the world, a great segment of the traumatized individual's focus is lodged in the past via the trauma. Trauma is associated with actual events – individual instances or sequences of events in an individual's history – a traumatized human being experiences the daily expressions of traumas.

The founding dynamism of the trauma is embedded in the autonomous nervous system, which consists of the two branches sympaticus and parasympaticus. Sympaticus controls focus, tension, and fight/freeze, while the parasympaticus deals with the ability to relax, give nurture, and regenerate. When a human being is traumatized, the balance between these two branches is disturbed, resulting in an overexposure of sympaticus. Subsequently a permanent condition of tension and stress occurs. This is the core of the trauma.

Traumas and Living Complex Systems

Traumas are always a systemic reaction, which subsequently unfolds as systemic dysfunctions via the daily expressions of traumas. The systemic reaction/ dysfunction occurs on all levels:
The trauma is caused by external forces – the surroundings and the environment – via accidents, catastrophes, war, and assault.
In the traumatized human being, the trauma affects among other functions the balance between the sympaticus (fight/flight) and the parasympaticus (relaxation/regeneration) in the autonomous nervous system, which is a central part of the feedback mechanism that ensures balance and sustainability.

In practice this means that the trauma affects all parts of a human life;
a) the internal, b) the relational and c) nexuses – for instance the family and society.

"Traumas weaken or create a dysfunction in a feedback mechanism, and the results are stereotypical and inflexible systemic patterns and types of behavior."

In all cultures and in all ages traumas are a normal and well-known type of reaction. As a species, we continually develop in spite of and because of traumas. Even if we are victims of a violent accident or a cruel and unjust war, there is still hope – in a long term perspective it is after all possible to get your life back on track. Experience shows that traumatized individuals have the ability to re-establish life processes and find inherent resources – resources that are associated with the basic ability of all living beings to ensure survival and progress in life.
As human beings we have intrinsic regenerating resources that help us overcome our issues and move on. Communities and groups embody ancient collective knowledge about strategies of mastery and restoration of balances. This knowledge can – along with modern cross-cultural theory and practice – constitute a background of a systemic, holistic intervention. A general characteristic of trauma is that it creates some dysfunctional dynamics in which the individual experiences a sense of awkwardness. Moreover, children who grow up in families challenged by trauma can be the victims of secondary trauma.

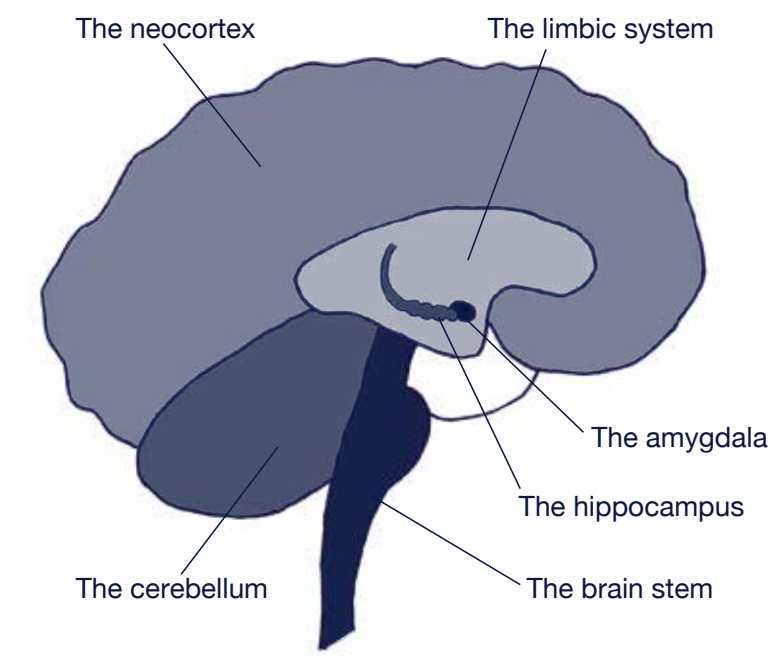
Traumas are contagious – on secondary traumatization

As indicated above, traumas are a systemic dysfunction. Traumas are "contagious" on all levels, and they are expressed most evidently in the traumatized person's close environment, for instance all the contacts and systems which are qualitatively and/or quantitatively closely associated with the traumatized individual.
In professional terms this negative influence is called secondary traumatization. As mentioned, it affects the rest of the family and particularly the children. It moreover influences the local environment hosting the traumatized individual(s). Over time, this may result in the formation of subcultures.
Secondary traumatization affects society in several ways, and symptoms of trauma may be seen in individuals on the fringe of society, as well as in an increased polarization of society.
Furthermore, secondary traumatization affects the wide variety of individuals and types of co-workers who engage professionally with the traumatized individual, i.e. staff in integration centers, psychologists, pedagogues, social workers, teachers, etc.

The neurobiology of trauma

In an evolutionary context, quick reactions to perceived dangers have had significant survival value. The animals and human beings, who were the fastest at hiding, fleeing or, if necessary, fighting for their freedom, survived longer than their peers.
In human beings the limbic system and the autonomous nervous system are central areas in the neurological processes that unfold in the continual awareness of possible dangers. These areas also play a major part in the contexts of trauma.
The brain's alarm system is controlled by, among other organs, a small almond shaped structure, named after its shape: amygdala, which in Greek means almond.
Amygdala is the brain center that co-ordinates behavior as well as immunological, and neuroendocrine responses to threats from the surroundings. It is also the brain's storage house or database of more powerful emotional experiences. The amygdala combines incoming emotional signals with stored emotional memories. If there is the slightest similarity between earlier violent memories (or traumas) in amygdala's database and the perception of the external event, amygdala will immediately signal the autonomous nervous system, and activate the body's fight/ flight response. There is a direct connection between amygdala and the heart rhythm:
The amygdala's task is hence to scan via the senses, and be vigilant in terms of whether any kind of danger or disturbance occurs. In the context of reading other people, the amygdala is attached to the structures which are associated with facial recognition. In this respect, the amygdala is active already from birth. In this early stage the amygdala is important to the formation of all emotional communication and learning.
Another important structure in the limbic system is the hippocampus. This structure has also been named after its form and it is said to resemble a seahorse – hippocampus means seahorse in Greek. The hippocampus is located in close proximity to the amygdala. As opposed to the amygdala, it is not developed from birth. It develops slowly during the first two to three years of life.
The hippocampus plays an important role in terms of learning and memory. Among other things it controls the processing of time, space, place, and processes of generating meaning. This means that the hippocampus participates in combining memories with time and place. This function makes it crucial to the autobiographical memory, which is the ability to remember and locate one's life history in a time continuum.
When the amygdala goes into hyperarousal or overdrive because of a perceived threat, the activity level of the hippocampus decreases. This means that the orientation ability (time/ space/ place/ meaning) and the capacity to understand what happens are weakened along with the ability to verbally express what goes on.
This process can also be registered in the so-called Broca's area in the left hemisphere which administers language. The activity in this structure also decreases. This is the reason that the expression "to become dumb with horror" is as old as time.

The brain



The Brain's Tripartite Structure
The human brain is made of a large number of varied and complex interconnected functions. Since Paul MacLean in 1970 described the brain as "three in one", it has been common knowledge that the brain was structured by evolution. The oldest sector is the reptile brain (1) on top of which we developed an emotional mammal brain (2) and most recently the human brain or the neocortex (3).

In the recent decades research in neuroscience has made great progress, which indicates that the brain is much more complex than previously assumed. The new data also specify that our present knowledge represents only a fraction of what we still have to learn about the brain! For our present purpose the following simplified and pedagogical model will suffice:

1) The brainstem and the cerebellum (the reptile brain)

2) The limbic system (the mammal brain)

3) The neocortex (the human brain)

The brainstem and the cerebellum constitute a basic unity which attends to the greater part of the autonomous processes in the human psychophysical system, including the regulation of heart rhythm, breathing, and hormonal functions as well as the basic balancing of a number of subsystems in the totality of the human organism – also called the homeostasis. The brainstem is in charge of bodily sensations and energy regulation in the human body.

The limbic system is located in the center of the brain and plays a vital role in all kinds of emotional processing. In the context of trauma, the sectors amygdala and hippocampus, which will be mentioned later, are significant. Moreover, this system attends to the balance between the internal and the external world, and interprets and processes the impulses from the brainstem.

The neocortex interacts with and analyses experiences from the external world and is considered to be our emotional, thinking, and planning system. The brain is not only constructed on a hierarchical basis. It is also divided into a right and a left hemisphere with completely different functions and periods of growth. In the adult brain the left hemisphere attends to categorization, classification, analytical, and differentiating processes, while the right hemisphere is in charge of holistically oriented, spatial, social, and integrative processes (Hart, 2006).

The Autonomic Nervous System

The autonomic nervous system is a comprehensive and complex structure whose main function is to support the body's internal balance system, also called the homeostasis. The autonomic nervous system is the neurophysiological basis of sensation. One of the simplest ways to link up with the homeostatic process is through the two branches of the autonomic nervous system: sympaticus and parasympaticus. Sympaticus guides and controls activation in response to threats and other kinds of high level energy processes, which manifest through an increase in the heart rhythm. Parasympaticus regulates relaxation, sleep, the lowering of the heart rhythm. The regulation of the relaxation also involves the emptying of the bowels and the bladder.

As previously mentioned, the parasympaticus controls the ability to relax and fall asleep. Actually the parasympaticus maintains the restorative processes, the digestion in the stomach and the intestinal system, the immune system, etc. When the sympaticus is overexposed in this way, and the parasympaticus is underexposed, then the cumulative psychophysical system undergoes a significant impairment. Moreover, the general ability to receive feedback internally and externally is weakened. This means that the system's self-regulatory ability becomes significantly worse. The system moves from a state of harmony and balance towards imbalance, i.e. rigidity and/or chaos.

The daily expression of trauma

The systemic dynamics of trauma manifest in a number of ways in the traumatized individual (and in the family). In general, the individual's (as well as the family's) ability to communicate and organize feedback is impaired and hence the capacity to co-ordinate orientation, adjustment, mastery, and meaning suffers. This impairment is expressed within four main categories; two of the categories are associated with the sympaticus (1+2) and two of the categories are associated with the parasympaticus (3+4).

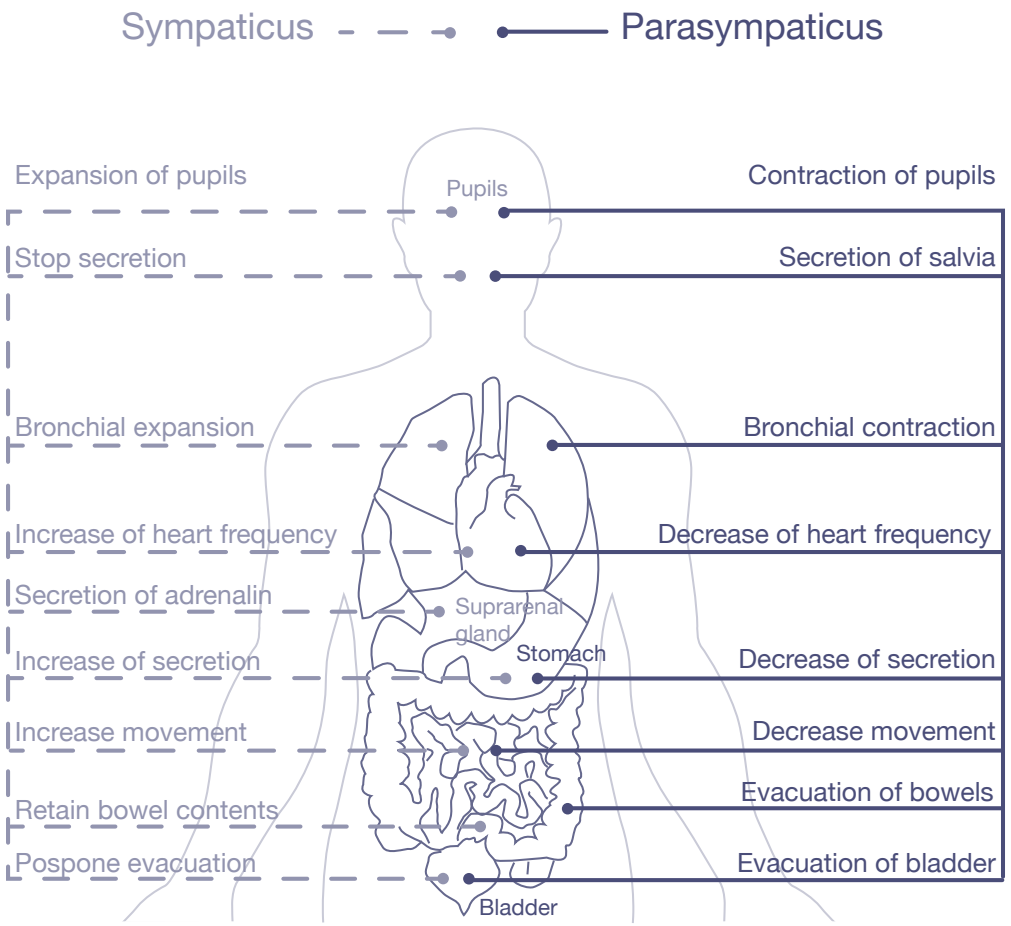
The traumatized individual (and the family):

- Organize themselves on the basis of a constant and increased stress-arousal (sympaticus), which in among other ways is expressed in sleep disorders, pains, anger, and irritability
- Develop a basic fear-induced hypervigilance, in which the trauma is re-lived indefinitely via invasive memories, dreams, and nightmares (sympaticus) characterized by anxiety
- Suffer from disorientation and establish a basic evasion pattern, for instance in the contexts of contact with the surrounding world, a range of emotions, and in terms of structuring and planning (including strategies for the future)
- Are characterized by despair and depression.

A general pattern is frequent overreactions completely out of proportion with the situation. The cumulative life situation imprints shame, guilt, and a profound sense of being awkward.
The basic imbalance between sympaticus and parasympaticus weakens the ability to organize feedback. This creates an increasing dysfunction, which manifests negatively around sympaticus (stress arousal (1), and flashback (2)) as well as around parasympaticus (evasion behavior (3) and depression (4)).

At an early stage in our evolutionary history we developed to become social beings. A large segment of our brain's control functions is in fact based on neural circulations, which also focus on participating in and understanding social processes involving other people in group contexts. These brain processes, among others, are active at early stages in life, particularly in the relation between the person who provides nurture and the child who receives it. Daniel Stern describes three stages which are of great significance to the early intersubjective relation:

The autonomic nervous system – sympaticus and parasympaticus



In an evolutionary perspective the human nervous system is constructed in such a way that it is constantly sensing and scanning inside out and outside in, in a calm and regular rhythm. The two branches of the autonomic nervous system sympaticus and parasympaticus, coordinate the heart rhythm in an even variation – sympaticus increases the heart rhythm and alertness, while parasympaticus lowers the heart rhythm and attends to relaxation and regeneration. The continuous out-in and in-out rhythm is co-ordinated with the sensing of the body and experiencing the external world through the senses. It is like a pendulum or an open/close mechanism which constantly alternates between being ready for action and then resting, constantly changing between sensing the surroundings and sensing itself. The constant organic attentive listening is vital to the feedback system, which since time immemorial has ensured survival and sustainability. The nervous system is totally committed to linking the internal and the external worlds.

Sympaticus as well as parasympaticus are crucial in terms of communicating bodily sensations to the brain and translating them to emotions. Emotions embedded in the body immediately change the heart rhythm, which again influences the brain activity. This process, this dance or this organic wave occurs continuously in the body. Every minute, every hour around the clock there is an arrhythmia between sympaticus and parasympaticus. The arrhythmia speeds up the heart rhythm and relaxes it, it is linked to the limbic system which ensures that the body is constantly aware of any reasons for being particularly vigilant. In an evolutionary perspective this is a reflection of the fact that human beings used to be possible prey for enemies of every description, including animals. The increase and decrease in heart rhythm, which happen in a matter of seconds, are also called the heart rhythm variation.

1: The ability to participate in a shared field of attention.

2: The experience of having shared intentions.

3: The ability to participate in other people's affective states.

The cumulative effect of these three stages facilitates integration and coherence. When the system is unbalanced, the result is chaos and/or rigidity.
The deadlock of fear-based internal processes involving the amygdala and the sympaticus create the trauma's systemic dynamism, which is an impairment of the self-organizing ability to find balance. When the sympaticus is overexposed in this manner, and the parasympaticus is underexposed, the cumulative psychophysical system is weakened. This results in physical symptoms, emotional instability, obsessive-compulsive thoughts, and problems with concentration, memory, and relations to other people.

The necessity of systemic change – fostering new opportunities

The necessary process of change is already happening. For a number of years we have seen it flourish and begin to take shape in many locations. Now it has arrived, or perhaps we should say that given the imminent necessary changes which the western countries in particular need to embrace, we can detect tentative beginnings, which on a long term perspective will become a fully fledged paradigm shift.

"Fortunately, more and more people are beginning to sense that the mounting sustainability crises are interconnected – symptoms of a larger global system that is out of balance. As soon as people understand this, their view of the problems shifts. They start to see the extraordinary opportunities for innovation that can occur when we abandon fearful, reactive mentalities. They start to realize the deep problems we face today are not a result of bad luck or a greedy few. They are the result of a way of thinking whose time has passed."

This perspective is formulated by the MIT Professor Peter Senge in the book *The Necessary Revolution*. We know for certain that everthing is interconnected. The actions taken by the company, events in the kindergarten, our consumer choices, various political decisions – all these create certain conditioned responses. Still we continue to behave in ways which imply that individuals as well as large systems are unbalanced. It is not just human nature and natural systems that are to blame. It is our thoughts and attitudes, emotions, and assessments – or in Peter Senge's concise formulation: the mind-set of the past. It is urgent to foster and formulate a new mind-set.

A new paradigm

Western science has had a tendency to recognize only objectively measurable data as science. However, recent technological landmarks like, for instance, various types of brain scanners, new neuroscience, and the establishment of a neurophenomenology per se have created an interface, where internal and external sciences focusing on human beings perhaps will become two sides of the same coin.

"Historically, we in the modern, scientifically oriented West have isolated the mind from the body, from nature, and from other minds. Our experience of our body, nature, and other minds has to be constructed privately... We are now experiencing a revolution...that the mind is always embodied in and made possible by sensory-motor activity of the person, that it is interwoven with and co-created by the physical environment that immediately surrounds it, and that it is constituted by way of its interactions with other minds. The mind emerges and exists, from intrinsic self-organizing processes, interacting with other minds."

Daniel Stern

THE DAILY EXPRESSIONS OF TRAUMA

4 strategies to face the fear:
FIGHT/flight/faint/dissociation

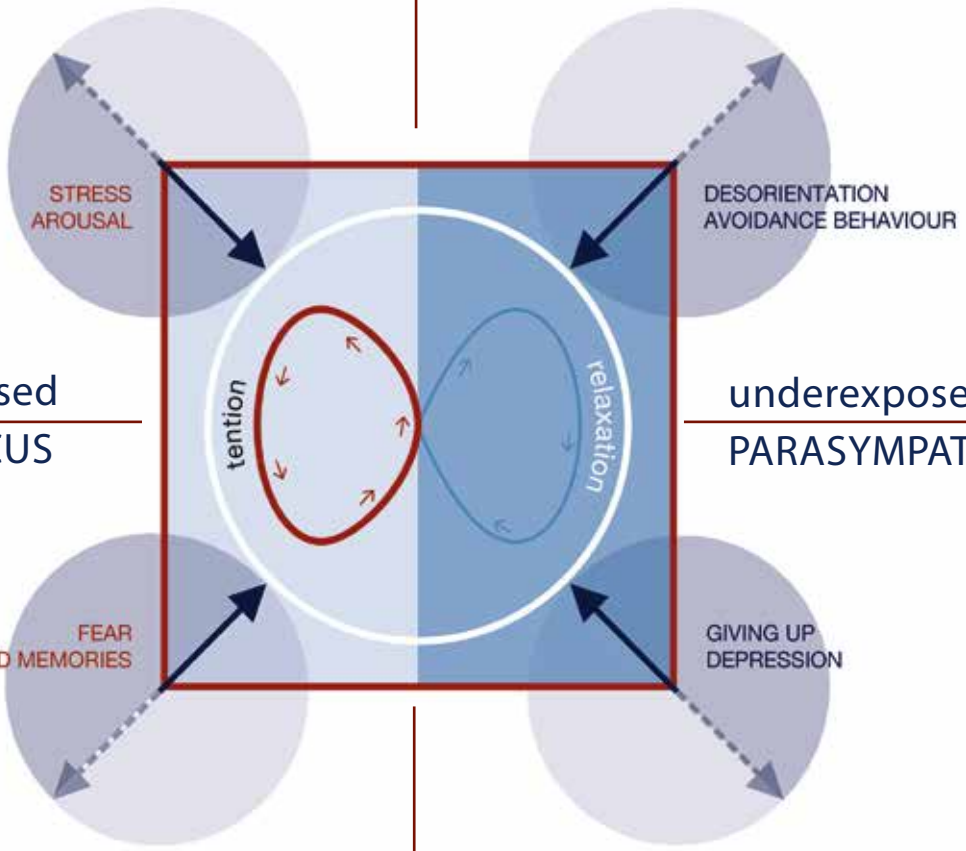
STATES
1. Hormonal imbalance/ cortisol poisoning
2. Tension, muscular tension
3. Physical pains, headache, stomach pains, etc.
4. Superficial breathing
5. Insomnia

BEHAVIOR/ ACTION PATTERNS
1. Physical agitation and restlessness (in and out the door)
2. Frustration, anger
3. Weakened deferral of needs
4. "Open telephone"
5. Weakened concentration

4 strategies to face the fear:
fight/flight/faint/DISSOCIATION

STATES
1. Dissociation - disappearance
2. Confusion, ambivalence, doubt
3. Impaired memory
4. Chaos in time – location -- space
5. No feeling/sensing

BEHAVIOR/ ACTION PATTERNS
1. Withdrawal from the group
2. Low attendance
3. No confidence in others
4. "Loses track" easily
5. General "chaotic" behavior



overexposed
SYMPATICUS

underexposed
PARASYMPATICUS

STATES
1. Fluctuating emotions
2. Anxiety attack, flashback
3. Hypervigilance
4. States of shock
5. Astral states, hallucinations

BEHAVIOR/ ACTION PATTERNS
1. Emotional agitation, "constant flight"
2. Neurotic anxiety behavior
3. Emotional control
4. Disturbing thoughts
5. Seeing problems everywhere

4 strategies to face the fear: :
fight/FLIGHT/faint/dissociation

STATES
1. Lack of muscle tonus, fatigue, exhaustion
2. No motivation, sadness, meaninglessness, grief
3. Hopelessness, apathy, despair, suicidal thoughts
4. Loneliness
5. Catatonia, paralysis

BEHAVIOR/ ACTION PATTERNS
1. Shyness, withdrawal, isolation
2. Incapable of making a decision
3. Lack of responsibility
4. No energy to participate
5. Letting things drift

4 strategies to face the fear:
fight/flight/FAINT/dissociation

Principles of living systems

A living system is an organized pattern or a network of elements which are coordinated, mutually dependent, and function as a totality. You cannot divide the totality into its elements without losing essential synergy, and likewise the parts cannot be understood without a relation to the whole, which again differs from the sum of its parts. Everything is a part of one or more systems. Furthermore, biological and social systems are open systems. This means that their relations to external elements and systems are mutually influential.

Living complex systems are open and chaotic, and they follow a number of basic rules or principles.

The first principle is:

SELF-ORGANIZATION
The living system interacts with all the elements and components, which generate its complexity. In this comprehensive communication and feedback a self-organizing flow is created and developed over time.

The second principle is:

INCREASED COMPLEXITY
Complex systems tend to move in the direction of still greater complexity. This means that the various elements in the system in time will become increasingly integrated. This indicates that the system's complexity is increased. The continual increase of integration is also identical to the system's harmony and balance. Increased complexity occurs in two basic forms: balance, i.e. a still greater increase in complexity (integration and harmony) – and – disturbance og imbalance manifested either as *rigidity or chaos*.

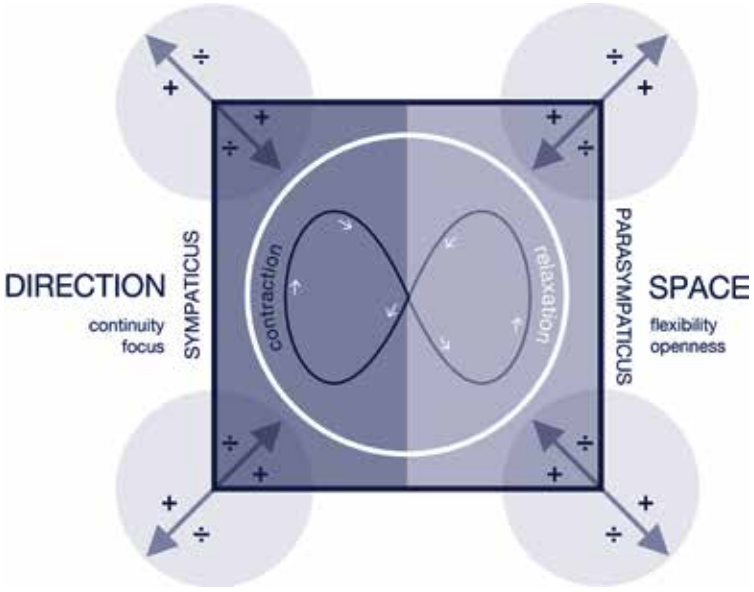
The system maximizes complexity by listening to, connecting, and creating coherence between its various components. In this way it creates an integrated sustainable system. When the system is in this condition the third principle applies. The system will then be:

FLEXIBLE, ADAPTABLE and STABLE
The system gains stability while progressing towards complexity. The complexity is not achieved via random activities, but it is *increased through the balance between the continuity and the flexibility of the system.*

The continuity refers to the resources achieved in former conditions. Hence the continuity points to the probability that these conditions will be repeated. Continuity generates consistency, familiarity, and predictability. Conversely, flexibility refers to the system's degree of sensitivity to the conditions of its surroundings, i.e. the ability to undergo changes to new modes which involve uncertainty. In this way the ability to bring about new variations affords the system an opportunity to adapt to the surroundings.

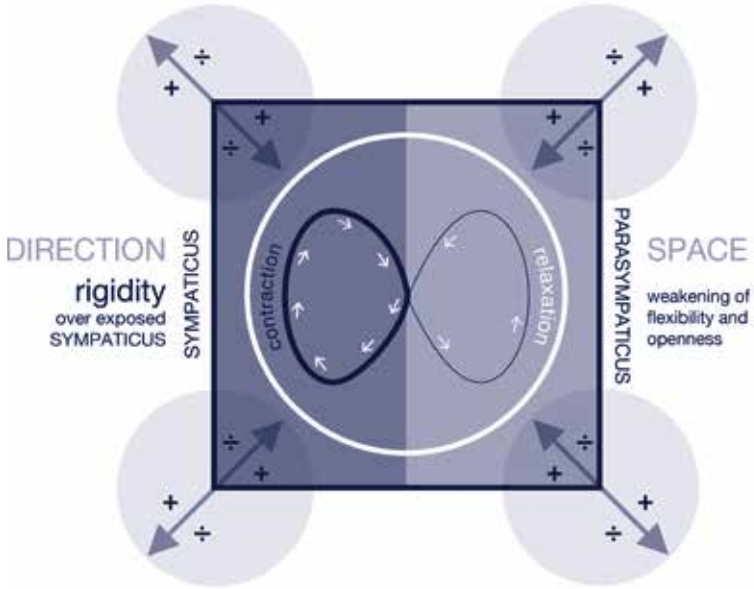
"Living systems ensure balance (homeostasis) and sustainability through varied forms of feedback from within the system itself and from the surroundings and the environment."

In human beings, balance (homeostasis) and feedback are located in the autonomic nervous system. The organic and complementary rhythm between the sympaticus (continuity) and the parasympaticus (flexibility) ensures integration and harmony.



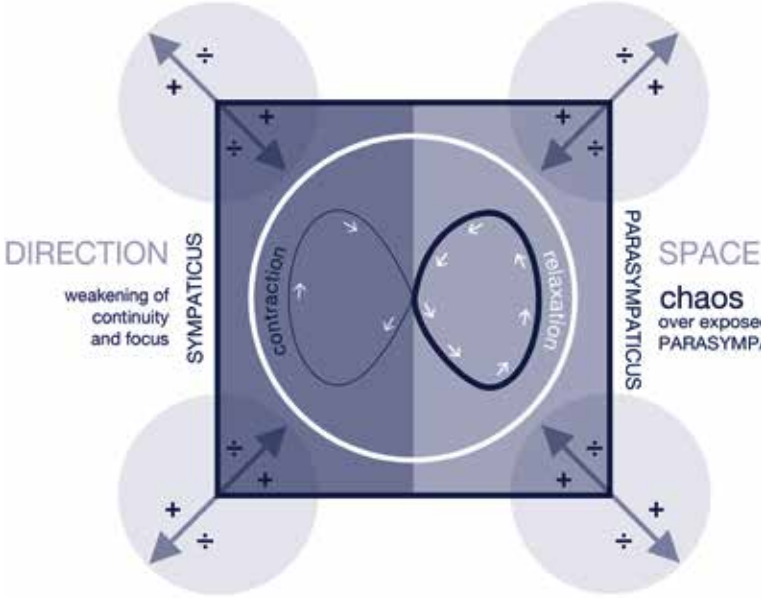
SYSTEM in BALANCE
When the system is in balance, the energy flow of information and communication is organized in a continual interaction between the sympaticus and the parasympaticus.

Sustainable balance –
harmony in a complex living system



SYSTEM in IMBALANCE
When the system is unbalanced, the energy flow of information and communication is weakened and tends towards either rigidity (sympaticus) or chaos (parasympaticus).

Imbalance – tending towards rigidity



Imbalance – tending towards chaos

From Implicit to Explicit Processes

The brain creates generalizations, often called mental models, on the basis of repeated experiences. These mental models are created in the activation patterns of neuron groups associated with the senses (sight, hearing, smell, touch, etc.). This is part of our implicit memory. Mental models subsequently become a form or a lens, which directly influences the ways in which we experience and respond in the future. These implicit memories and the mental models they generate create themes in our narratives of self, and they organize the modes in which we make decisions. You could say that mental models are filters or lenses of sorts that help us predict the future and prepare us for action. This occurs outside the realms of conscious attention and unconsciously influences our perception – all on the basis of prior experience.
In this way unclear life processes and problems from the past influence our present and determine the future. Our decisions and the narratives we tell about our lives can become more explicit and conscious through focused reflection on our implicit mental models. Such conscious processes change our self-understanding and by extension our mental models.

When you take time out to reflect, the doors of conscious perception open up, giving you the opportunity to make changes.

The greatest alteration or the most significant change of gears in this process of development and learning concerns the shift from being controlled by and focused on external factors to an anchoring of attentive consciousness in the individual human being, in other words to change your explicit disposition. We should learn from within the basic components of a human being, while also maintaining the individual as an instrument, by tuning and training him or her. *The training is the crucial point*, the vital discipline which enables a genuine change of gears.

A Gear Shift and Four Fundamental Aspects of the Mind

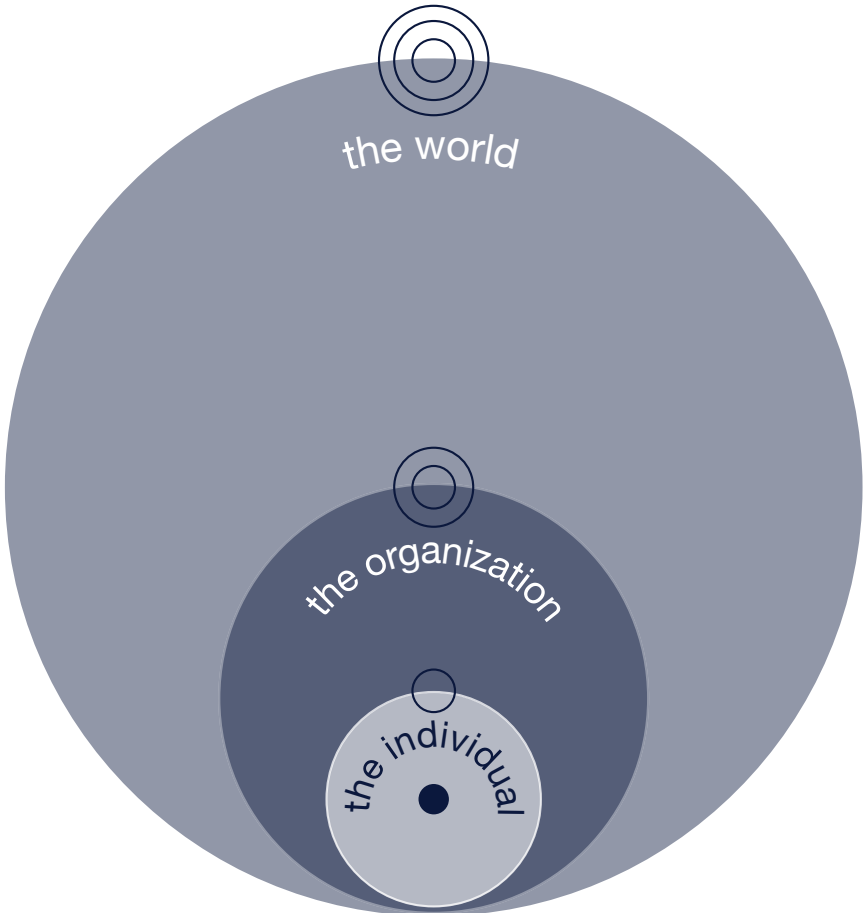
"Getting to know another person requires that you know who you are. Although this might seem obvious and simple, knowing who you are involves an extremely high state of awareness that includes self-insight, curiosity, wisdom and a still point from which to experience the world."

Louis Cozolino, 2006

The sustainability of living systems is maintained through feedback – feedback from within and from the surroundings. The continual gear shift is a widespread natural transition or rhythm, which constantly takes place implicitly in life and in nature at all levels. We see it in the changing of the seasons, the circadian rhythm, night and day, and we see it in many types of organizations and planning, for instance teaching and pause, work and spare time. Once you begin to look, you see it everywhere, for instance in our veiled internal unconscious processes, where the constant balance between the two branches of the autonomous nervous system (sympaticus and para-sympaticus) are always coordinated and in sync with the fluctuations of the heart rhythm. The heart constantly changes gears, as does the breathing function – breathing in – pause – breathing out – pause – breathing in – pause.

Activity, expression and dynamism are always followed by relaxation, regeneration, and introversion. After all the words, thoughts, and opinions, all will be quiet, if you listen. It is this organic pulse or breathing, this gear shift in the activity-and-rest rhythm, that ensures that the implicit, self-organizing processes in human beings and in nature are allowed to live, take effect, and become sustainable. *The living system senses the world and itself in this way.*

Living systems



All systems are embedded in subsystems and metasystems. A human being consists for instance of a wide range of subsystems – organs, cells, etc. Concurrently we also participate in metasystems such as a family, an organization, a city, and ultimately the planet, the solar system, and the universe. Living systems are characterized by three important traits:

- *Autonomy*
- *Circularity*
- *Self-reference*

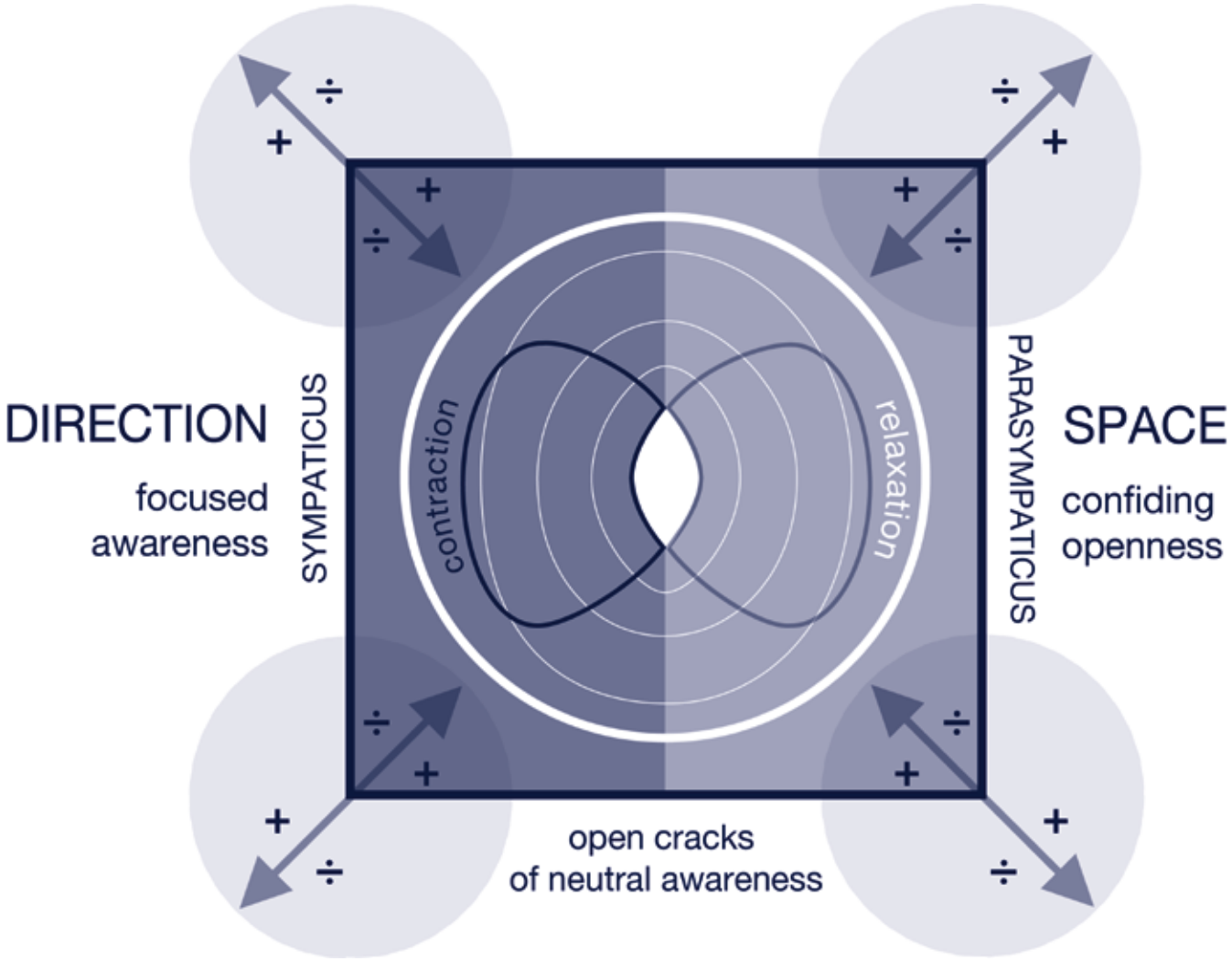
These characteristics enable living systems to create or renew themselves. As mentioned, the cognition biologists Humberto Maturana and Francisco Varela call this ability autopoesis, which literally means self-creation or self-production. The theory of autopoesis also considers the surroundings of a given system, but insists that the connections to any environment are conditioned by the system's internal factors. This means that the perception patterns (or the matrix) of the human brain and nervous system decide how a human being perceives external reality. Maturana and Varela also question the validity of distinguishing between a system and its surroundings. They do not consider systems to be totally isolated, even if living systems are closed and autonomous like human beings. The closure and autonomy mentioned are by nature organizational. Living systems encapsulate themselves for the purpose of creating communication patterns. The big question is where one system begins and ends? Systems are like Chinese boxes. They are totalities within greater unities. The system has no beginning and no end, because it consists of a closed loop of actions and communication. Its basic purpose is to reproduce itself. The main product is the system's own organization and identity.

A Gear Shift and Explication of What Happens

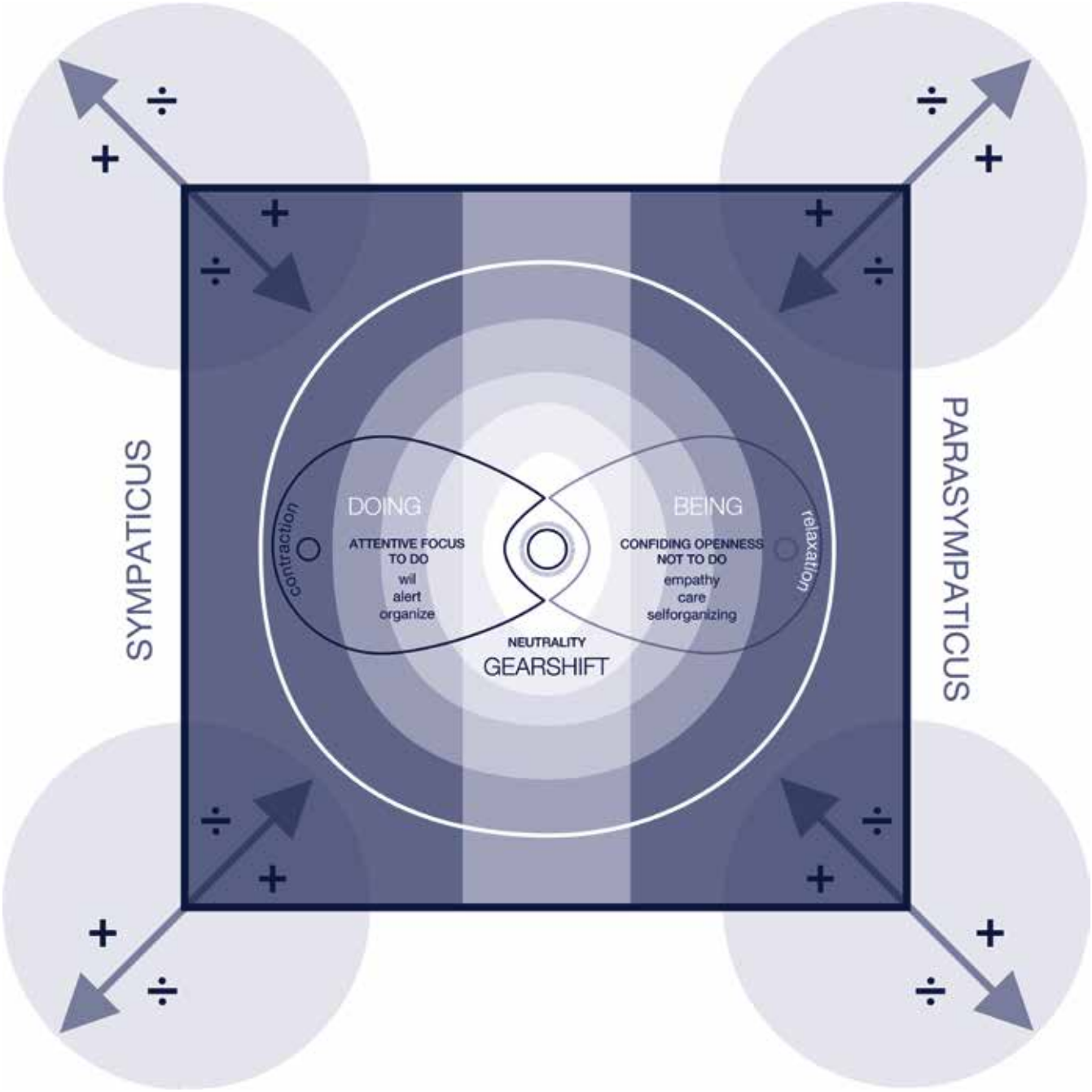
The concept of the gear shift is important to the practical development of the ideas and the directions discussed in this paper. The concept of changing gears means to become conscious of any kinds of changes, and to understand what happens while it happens. Changing gears is a quite simple method of paying attention to changes in general and specific patterns.

The autonomic nervous system, which performs the central function of maintaining the body's internal balance through the homeostasis, provides an opportunity to learn about sustainability in a human context. The autonomic nervous system is also, as previously mentioned, the neurophysiological basis of sensation. One of the simplest ways to link up with the homeostatic process is through the two branches of the autonomic nervous system: the sympaticus and the parasympaticus. The sympaticus controls the activation of responses to threats and other kinds of high level energy outputs, for instance through the increase of the heart rhythm. Conversely, the para-sympaticus regulates the subduing of the heart rhythm, thereby contributing to relaxation, sleep, and regeneration.

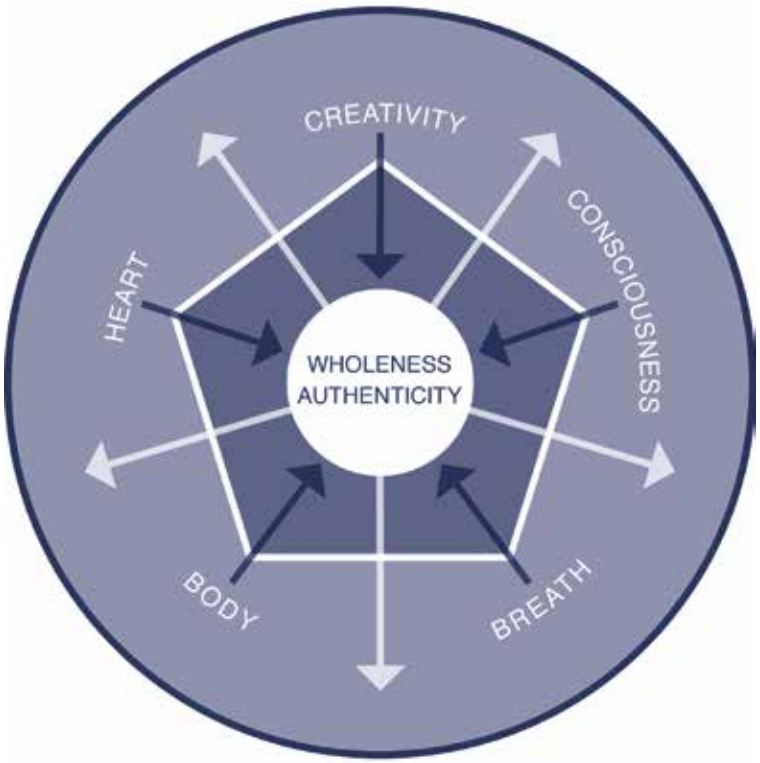
The continuous organic and automatic shifts between the two branches represent an opportunity for optimization through reflection. Even the reflective process can be trained as a gear shift. The main point is to recognize the functions of the sympaticus and the parasympaticus. This ability makes it possible to discover a third function, which is a conscious integration of the essence of the two basic types.
The sympaticus supplies attentive focus, and the parasympaticus contributes confident openness. This blend generates an integrated registering witness function with an open neutral attention. As long as you can keep the balance, i.e. not give preferential treatment to either side, then it will be possible to witness more aspects of the ongoing events. On this basis the willful attention manifests in three basic ways: 1) a neutral registering mode, 2) a relaxed self-organizing mode, and 3) a focused organizing mode.
In the first category we are in neutral gear, i.e. the ability to be neutral and register reality as it is. The second category represents a relaxed gear (the parasympaticus), which entails surrender to the self-organizing forces, letting go, and practicing not being in control. The third category corresponds to an active gear (the sympaticus), which encompasses focus, concentration, and action – the wish for proactive intervention in order to change reality.
We can increase our focus on transitions by using exercises and training in conscious attention. To the individual human being, awareness of fundamental internal aspects of the self is a disciplined exercise in sustainability. Varying the sensations and the discourses of body, emotions, thoughts, and relations, as they are experienced from within, reinforces the ability to get a more comprehensive feedback from one's own system. This also contributes to a development of the ability to be attentive and contact other human beings. From an overall point of view, feedback from internal and external perspectives is improved, and over time a more basic flexibility is generated in the adaptation and adjustment of life processes.



Feeling both the sympaticus and the parasympaticus



GEARSHIFT
relaxed – neutral witness – tense



Five basic human capacities

The model is a map of essential elements of the whole human being. And it is a description of how it is posssible to move inward towards deeper contact with oneself and outward towards better contact with one's fellow human beings.
The map, also called *gateways to empathy* (Jes Bertelsen), covers five areas which we have the innate capacity to develop and explore. These natural competences are consciousness of:

1. *The Body*

2. T*he Breath* and the energetic movements associated with respiration

3. *The Heart*, in the sense of empathic feelings reflected in the region around the physical heart, such as trust, love, sense of connectedness, compassion and gratitude;

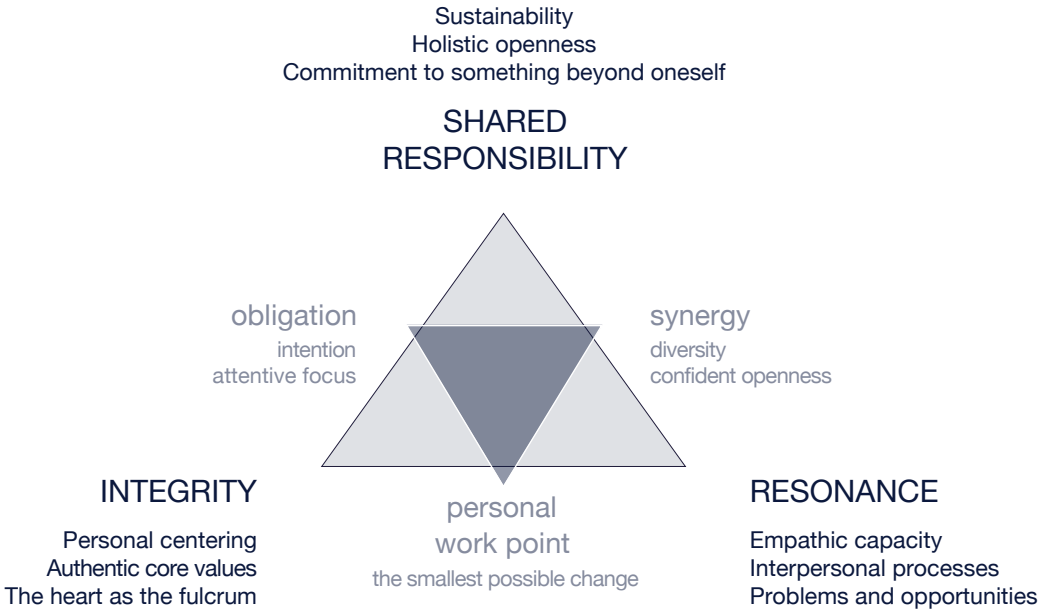
4. B*asic Creativity*, i.e. the fact that our environment, body and mind are experienced as being in uninterrupted creative movement.

5. *Consciousness* as such.

These five domains are initially trained one at a time and subsequently in combination so that at least three are being activated simultaneously. Together the five competences constitute the most direct way inward, towards the essence of human being. And outward towards contact with others.

Essentially, this training does not aim at learning something new, but rather at discovering and giving more space to that which has not been learned. That which one has an innate possibility to be and to be capable of.

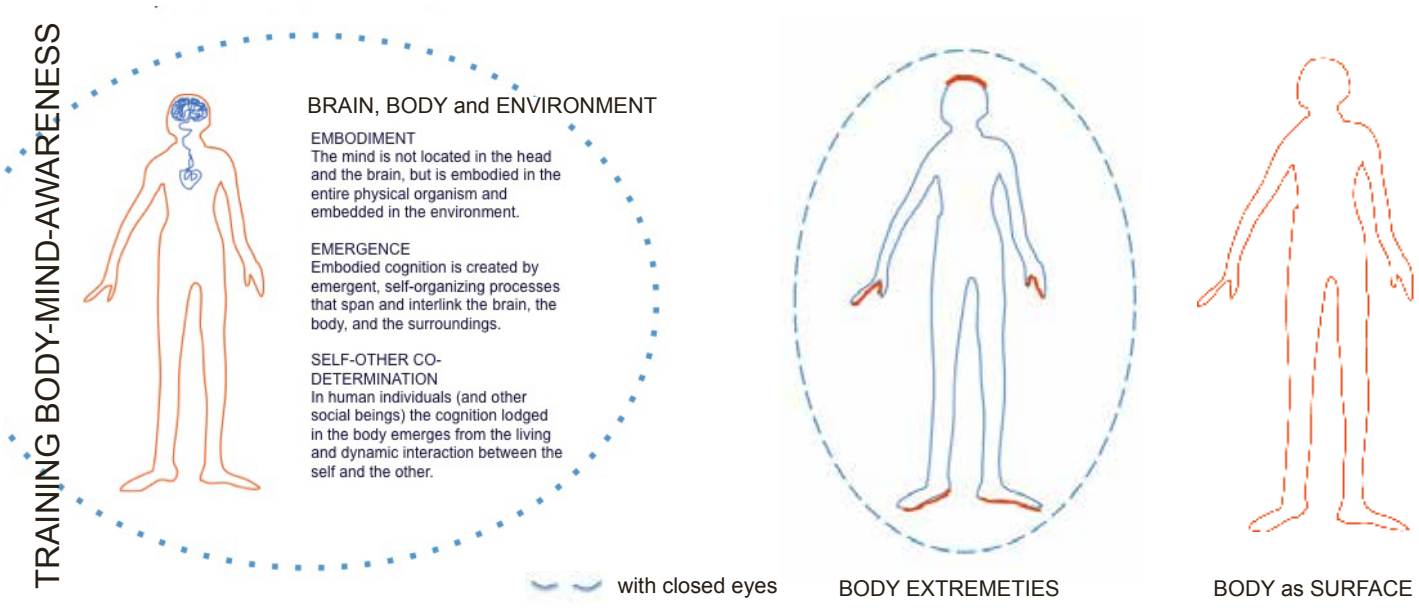
Levels of Gearshift • 2

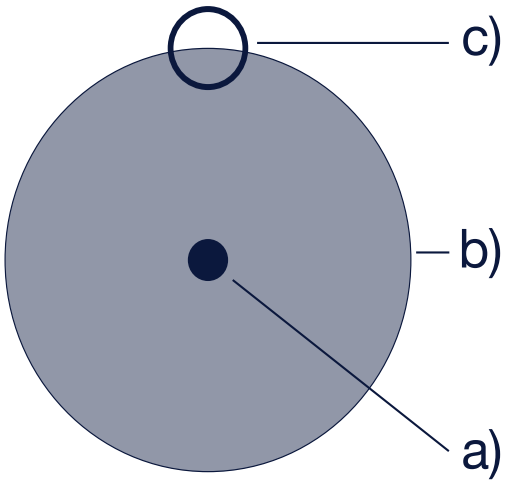


The leadership-from-the-heart triangle

The left corner of the triangle, integrity (corresponds to point a) in the living system model), has an internal focus associated with the centering of the personality. The right corner, resonance (corresponds to point b) in the living system model), concerns contact and communication with individuals and smaller groups of people. The third and upper corner, co-responsibility (corresponds to point c) in the living system model), refers to commitment to and cohesion with organizational and holistic processes.

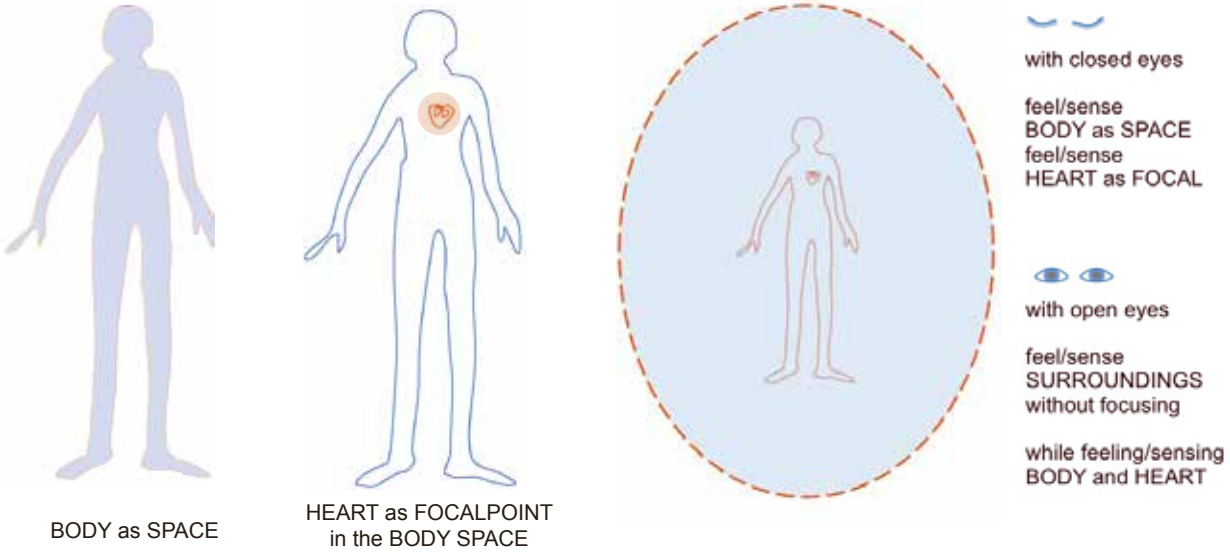
Levels of Gearshift • 3





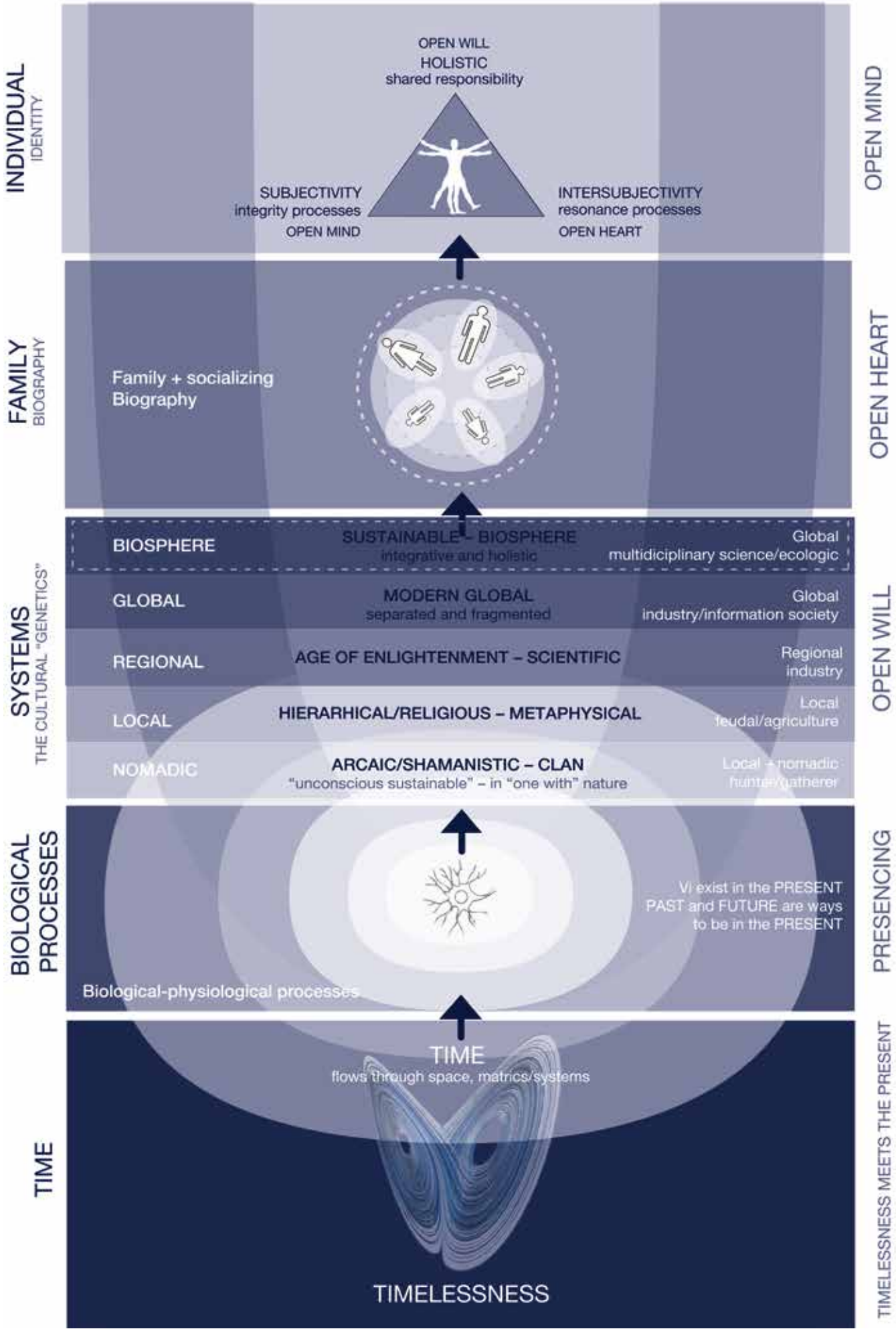
A living subsystem

The illustration explicates the ways in which the leadership-from-the-heart triangle is related to the living system model. The central reference system – *the internal core/focus (a) and the integrity*, which organizes experiences and values integral to life practice. *The periphery (b) – the resonance*. The internal human structure, which organizes knowledge about intersubjectivity – the periphery functions as a membrane to other people. *Cohesion (c) and shared responsibility.* In other words the internal structure, which organizes knowledge about environment/totalities – being part of a greater system.



HUMAN – SYSTEMS

Sustainable Co-Creation



Litterature

Antonovsky, Aaron: *Unraveling the Mystery of Health: How People Manage Stress and Stay Well* , New York University Press, 1987

Bech, G., Elbrønd, M., Stubberup, M.,: *Next Practice – best practice, family oriented psycoeducation for traumatised refugees* (in danish), SYNerGAIA Publishing, 2011

Biggs, R, Sclüter, M., Schoon, M. L. (Ed): *Principles for Building Resilience – Sustaining Ecosystem Services in social-Ecological Systems*, Cambridge University Press, 2015

Ammanity, Massimo and Gallese, Vittorio: *The Birth of Intersubjectivity*, Norton, 2014

Bertelsen, Jes: *Essence of Mind: An Approach to Dzogchen*, North Atlantic Books, 2013

Capra, Fritjof and Luisi, Pier Luigi: *The Systems View of Life*, Cambridge University Press, 2014

Cozolino, Louis: *The Neuroscience of Human Relationships*, Norton, 2014

Cozolino, Louis: *The Neuroscience of Psychoterapy,* Norton, 2010

Damasio, A.: *Self Comes to Mind,* William Heinemann, 2011

Depraz, N.,Varela, F., Vermersch, P. : *On Becoming Aware: A pragmatics of experiencing*, John Benjamins Publishing Company, 2003

Gallagher, Shaun: *How the Body Shapes the Mind*, Oxford University Press, 2005

Goleman, Daniel: *Emotional Intelligence*, Bloomsbury, 1996

Goleman, Daniel: *Destructive Emotions*, Harvard Business School Press, 2002

Herman, Judith: *Trauma and Recovery: The Aftermath of Violence – From Domestic Abuse to Political Terror*, Basic Books, 1992

Hildebrandt, S.; Stubberup, M.: *Sustainable Leadership – Leading from the Heart,* Copenhagen Press, 2012

Iacoboni, Marco: *Mirroring People*, FSG, 2008

Maturana, Humberto & Francisco Varela: *The Tree of Knowledge*, Vintage, 1987

Levin, Peter: *Waking the Tiger: Healing Trauma*, North Atlantic Books, 1997

Levin, Peter: *In an Unspoken Voice: How the Body Releases Trauma and Restores Goodness*, North Atlantic Books, 2010

Van der Kolk, Bessel: *The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma*, Viking, 2014

Panksepp, Jaak and Biven, Lucy: *The Archaelogy of Mind*, Norton, 2012

Petitmengin, Claire: Ten Years of Viewing from Within, Imprint Academic, 2009

Porges, Stephen, W.: *The Polyvagal Theory*, Norton, 2011

Rifkin, Jeremy: *The Empathic Civilization,* Polity, 2009

Scharmer, Otto C.: *Theory U,* Berrett-Koehler, 2007

Scharmer, Otto & Kaufer, Katrin: *Leading from the Emerging Future,* Berrett-Koehler, 2013

Senge, Peter: *The Fifth Discipline*, Random House, 2006

Senge; Scharmer; Jaworski & Flowers: *Presence,* SOL, 2004

Senge, Peter, m.fl.: *Learning for Sustainability,* SOL, 2006

Senge, Peter m.fl.: *The Necessary Revolution*, Doubleday, 2008

Siegel, Daniel: *The Developing Mind*, Guilford Press, 2002

Siegel, Daniel: *The Mindful Brain*, Norton, 2007

Siegel, Daniel: *The Neurobiology of We,* 7 CD-books, Sounds True, 2008

Stern, Daniel: *The Present Moment*, Norton & Co., 2004

Thompson, Evan: *Mind in Life: Biology, Phenomenology, and the Sciences of Mind,* Harvard University Press; 2007

Varela, Francisco J.: *The Embodied Mind*, The MIT Press, 1993

Varela, Francisco J.: *Ethical Know-How*, Stanford University Press, 1999

Varela, Francisco J., et al.: *On Becoming Aware*, John Benjamin Publishing, 2003

Varela, Francisco & Jonathan Shear: *The View from Within*, Imprint Academic, 1999

Yalom, Irvin D.: *Existential psychotherapy*, Yalom Family Trust, 1980

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