Access to the Present Moment: TraumaSomatics®, The Reorganization of the Somatic Memory System

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"A trauma has less to do with conscious memory but with the inability to calm down the somatic reactions."

- Bessel van der Kolk

The essence of TraumaSomatics®

Knowledge originating from neuropsychology, psychotherapeutic and somatic therapeutic methods, as well as from medicine and bio-sciences, combined with modern models of trauma therapy make it evident that the somatic level plays an essential role for development, fixation, and resolution of trauma. [3, 7-9]

TraumaSomatics® is a therapeutic method that is based on the reorganization of somatic memory located in what we call the SomaNet. An essential characteristic of this therapeutic method is that we work with somatic sensations and movements to resolve somatic traces of the traumatic experience. Both the calming down of the nervous system and changes in the structural and molecular net contribute to these processes.

TraumaSomatics® works with the human memory system which can be differentiated into semantic, episodic and procedural memory (see also readings from Allan Schore[1], John Grigsby and David Stevens[2], Bessel van der Kolk[3], and Eric Wolterstorff[4]). The therapeutic objective is the separation of these memory systems in order to work with them individually. The work with episodic memory via the somatic memory system integrates the traumatic experience. Procedural memory gives access to trauma-dependent patterns of behaviour, and the learning of abilities represents an important resource. Semantic memory supports the client in his autonomy and in managing the sequels of stress and trauma.

All these therapeutic tools support the development of the ability to recognize that the traumatic experience is in the past giving the clients access to the present moment.

Starting points for a somatic trauma concept

Traumatic experiences are generally accompanied by enormous stress and complex patterns of sensory input that are threatening and painful in an extreme way. The traumatic situation mostly appears like an unexpected attack leading to a state of shock. A trauma is connected with the experience that there is no opportunity to solve the situation and there is a deep sensation of being overwhelmed. The situation gets out of conscious control because the processing and storage of incoming traumatic information becomes uncoupled from higher brain functions. The reactions of the threatened human, which are orientation, fight, flight or freeze, are now driven exclusively by the autonomic nervous system. According to Janet (see Ogden [5]) this condition can be regarded as a constriction of the conscious field obstructing

the ability for assimilation and integration of new information.

The indissoluble cooperation of perception, feeling, thinking, and acting characterizes consciousness. Traumatic experiences are uncoupled from consciousness as the impressing events are associated with overwhelming emotions and somatic reactions depriving humans of the possibility of integrating an experience by appropriate action. The psychophysiological process of disintegration comprises consciousness, memory, somatic perception, movement, physical identity, and the perception of the environment, all covered by the term dissociation. Dissociation phenomena are typical aftermaths in traumatized individuals. The International Diagnostic Manual (ICD-10) describes the loss of integration as a neurophysiological dysfunction of the memory, the senses, sensibility and motor function, and personal identity. Consequently, an effective trauma-therapeutic method should promote the biologically integrative ability of connecting consciousness and the somatic level. By addressing the soma directly, awareness and experience are introduced into the therapeutic setting. These have a limited availability with primarily verbal therapies.

Recent psychotherapeutic methods that integrate the biological mechanisms and the soma have only hesitantly been adopted into a trauma-therapeutic treatment. [8, 10, 11] The therapeutic relationship changes because direct work with the soma produces completely new levels of perception. Transference and countertransference appear which are not so easy to handle in the therapeutic setting. This may be an important reason why work with the body is still suspect for many psychotherapists today. [6]

Peter Levine was the first to introduce a somatic level into the trauma therapy process. With his Somatic Experiencing® model of stress and trauma he turned the focus to processes in the nervous system. The typical course of the stress response begins with activation and arousal, these reach a maximum, then followed by calming down and relaxation of the nervous system. In the case of a traumatic experience this natural process is interrupted. Levine describes trauma symptoms as an aftermath of activation of energy that could not be released during the overpowering traumatic experience and is still captured within the nervous system.[7]

Somatic therapy methods like Structural Integration, Craniosacral Therapy and Osteopathy have recognized that work at the tissue level is essential for the development, fixation and resolution of trauma.[12-14] Even a purely psychic trauma leaves traces in tissues and cells in the same way a physical injury does. Psychotherapy, up to now, had no mechanistic models to understand how trauma and soma are bound in a somatic memory system. We have created the SomaNet model to describe the somatic side of trauma.

The SomaNet

The model of the SomaNet

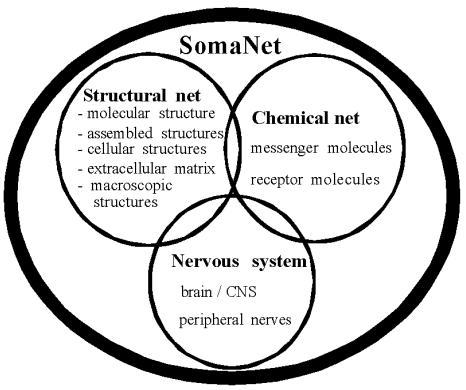


Figure 1: The principle of the SomaNet
The subunits of the SomaNet propagate and store information both on their own but also in close cooperation thus forming a soma-wide information network

Stress and trauma call for managing an excess of information, both from the outside to the inside of an organism and between the 50 billion cells, and different organs and tissues of the human body. The SomaNet model describes the highly linked and cooperating somatic network of information and communication which is characterized by self-organization and the capability for dynamic change. Our model combines experience from somatically oriented psychotherapy, trauma therapy and somatic therapies with recent research in medicine, neurobiology, cellular and molecular biology, biomechanics, physiology, biochemistry and biophysics. [15-21] This model uses our understanding of the processes of communication and

information exchange in the context of stress and traumatic experience, to find solutions to the sequels of trauma and the reorganization of somatic memory.

In the SomaNet model we categorize somatic intelligence in individual subunits designated as: the structural net, the molecular net, and the nervous system (Figure 1 and Table 1). The state of the components of the SomaNet is intimately connected with our well-being since traces of stress and trauma can be the cause of cell and tissue imbalances, leading to symptoms and the diagnosis of "dis-ease".

Table 1: The SomaNet in more detail

Subunit	Components	Examples of elements
Structural net	Molecular structures	Collagen molecules DNA molecules Tubulin and actin as molecular components of the cytoskeleton
	Assembled structures	Collagen fibrils and fibres DNA-double-helix Microfilaments, microtubules, intermediate filaments of the cytoskeleton
	Cellular structures	Chromosomes, nuclear matrix Cytoskeleton Cell membrane
	Extracellular matrix ("loose" connective tissue)	Collagen as essential element of the fluid-crystal-matrix
	Macroscopic structures	Fascia, tendons, ligaments Connective tissue as "envelope", e.g. perineurium, perimysium, perivascular tissue, around organs subcutaneous connective tissue
Molecular net	Neuropeptides / Peptides	Endorphines Hormones as insuline, prolactine Neuromodulators Immunopeptides, e.g. interleukines, cytokines Cellular growth or growth inhibiting factors
	Neurotransmitters	"Small" molecules as dopamine, histamine, serotonine Stress hormones: adrenaline, noradrenaline
	Steroid hormones	Cortisol (being also a stress hormone) Sexual hormones
	Receptor molecules	Neuropeptide receptors Neurotransmitter receptors Hormone receptors Cell surface receptors: integrins
Nervous system	Central nervous system	Brain with structures as the neocortex Limbic system: amygdala and hippocampus
	Autonomic nervous system	"Reptilian" brain - sympathetic branch - parasympathetic branch
	Peripheral nervous system	Sensory neurons Motor neurons
	Sensory systems	Sensory cells in nose, eyes, ears, for taste, sense of touch Mechanosensors in myofascia (proprioception)

stated that the major challenge in biology today is biocomplexity: the need to explain how cell and tissue behaviors emerge from collective interactions within complex molecular networks. The existence of "isolated" information networks has been recognized by a few scientists. These include a neuronal net in the brain[2], a network of information molecules[20], and a network-like organization at the structural and energetic level.[15-19] However, the SomaNet model is more comprehensive as it takes into account that these levels are all interacting with each other.

Basically, in organisms information can be coded via chemical composition of a molecule (concept of information or messenger molecules), via molecular or macroscopic structure (corresponding to arrangement of individual elements in space), via electric signals (transport of electric charges), via vibrational energy (electromagnetic waves), and via mechanotransduction (based on the principle of tensegrity). Consequently, the flow of biological information is susceptible to chemical or electric changes, mechanical forces, and electric and energetic fields. The subunits of the SomaNet use different codes for propagation and storage of information. It is a fascinating feature that the linking of different information systems and networks includes translation into different codes or "languages" that work in parallel so that communication becomes efficient and understandable at all levels of somatic organization. This is an essential contribution to our understanding of our ability to act as a coherent whole. As a consequence, we have to put the somatic traces of stress and trauma at multiple levels in the SomaNet even if the traumatic impact or the coding of information was at a single level initially.

The subunit of the structural net

The structural net builds up a soma-wide information system based on linked structures with a rather fixed location. As Table 1 shows, these components are arranged in a hierarchy from the molecular and cellular level up to complex macroscopic structures,

creating the essential elements of functional units as tissues and organs. Ingber[16] stated that the biological processes responsible for cell behaviour are based on hierarchical systems rather than iso-lated parts. This principle can be transferred to the organism as a whole. Stated the other way around: during a traumatic experience the fundamental responses of orientation, self-defence and protection happen not only on the level of the organism as a whole, but also on all structural levels down to the cell.

A prominent feature of the structural net is propagation of mechanical stress via the principle of biotensegrity. In Structural Integration the existence of a mechanical network resulting from the interaction of myofascia and skeleton is well-known.[22, 23] Within cells the components of the cytoskeleton behave like a discrete mechanical network. Extracellular mechanical stress is transduced mechanically from cellular adhesions at the extracellular matrix to the mechanosensors of the cells, so-called integrins, and from there to the cytoskeleton. By the three-dimensional arrangement of its elements, the cytoskeleton orients much of the cell's metabolic and signal transduction machinery. In this way, cellular structures associated with the cytoskeleton, such as organelles, the nucleus, and enzymes, can be affected in their function. This can lead to changes of cellular metabolism, physiology, and behaviour.

Tensional integrity of the cytoskeleton is essential for cell shape stability, and this tensional state determines the actual fate of the cell: death, differentiation (the active functional state of the cell), or growth and cell division. Changes do not proceed by chance, but end in discrete self-organized and stable states which can be different from the original functional state of the cell.[16, 17] Thus, mechanical imbalance on the cellular level can become the cause of disease. Ingber[18] published a long list of "diseases of mechanotransduction".

Comparing the subunits of the SomaNet, the structural net has the most complex mechanisms of information coding and propagation. Besides mechanical communication via tensegrity these mechanisms include spatial arrangement of molecules and more highly assembled structures (e.g. the cytoskeleton, collagen fibrils and fibres), electric signals, and coherent vibration. These mechanisms work in parallel and are highly linked to each other. Examples of this are found in how mechanical deformation induces electric fields in connective tissue structures; and how electric fields change spatial arrangements of molecules modifying their vibration (all linkages also act in reverse).[15,19,21] Furthermore, the structural net plays a dominant role as a sensory organ, mediated by fascial mechanoreceptors, which represent our richest and largest sensory organ.[24] This is one way information is exchanged between the structural net and the nervous system.

The subunit of the molecular net

Our insights into the molecular net originated from the experimental work of Dr. Candace Pert[20] on the "molecules of emotions". The molecular net includes information coded in single messenger and receptor molecules by their chemical composition, their molecular structure and molecular vibration.

The so-called "messengers" are signal or information molecules that move through the body via blood, lymph, and the extracellular matrix. Neuropeptides constitute 95 % of all messenger molecules and represent an evolutionarily old information system that is also found in single cell organisms. Although initially discovered in the nervous system (hence the name "neuropeptides"), a single type of molecule can exert quite different effects at different locations. After binding to specific receptors, which are their molecular counterparts located in the cell membranes, messenger molecules exert a variety of functions in the body. Messengers control and mediate cell growth and cell division (including tumor cells), nerve conduction, sexual function, endogenous pain inhibition (also in stress and trauma), and regulation of the central nervous system, immune system, endocrine system, and gastrointestinal system. In this way the molecular net links up distant parts of the soma with quite different functions. The initiation and regulation of stress and trauma reactions is intimately connected with communication processes via neuropeptides. Changes in the composition and somatic distribution of both messengers and receptors on the cells can have profound consequences for cellular, tissue and organ functions.

Neuropeptides are the physiological correlates of our emotions and mood states. Changes in the levels and patterns of neuropeptides and receptors influence our

emotional state, and vice versa. Scientists at the National Institutes of Health detected a correlation between depression and the experience of trauma in early childhood which is mediated by the disturbance of neuropeptides.

The subunit of the nervous system

Organization in the brain is based on a dynamic neuronal network with a high degree of plasticity. Outside the brain there is a hard-wired system of nerves that transports information from the brain to the periphery and vice versa. Nerve conduction occurs via electric impulses (action potentials) and the action of neurotransmitters (components of the molecular net). Hierarchical models supported the basic idea of the brain as the central control unit. In many disciplines the nervous system is still seen as the exclusive or most significant part of the body that manages transport of information. The brain processes information and stores it in memory systems in a form that is accessible for conscious recall. Further, the brain is involved in cognitive functions, perceptual, sensory and motor activities, which require transport of information back to the periphery.[2, 20, 25] However, information input into the brain is considerably higher than output in the opposite direction. As the model of the SomaNet shows, the flow of information in the nervous system represents only a minor part of the total communication in the soma.[19, 20]

The SomaNet as somatic memory system

According to Janet [5] the individual can be regarded as an accumulation of memories. Commonly, we associate memory functions with the brain. From therapeutic work we know that the soma contains an isolated and independent memory function that reveals memories uncoupled from consciousness. The SomaNet is the substrate of this somatic memory system.

Information is stored in the structural net via molecular spatial arrangement, via electric fields and vibrations. Pursued up to the macroscopic structures of the connective tissue and the muscles, this results in unconscious patterns of muscular tension and degenerated posture.[26-28] Changes in concentration and cellular patterns of neuropeptides and their receptors throughout the whole body constitute another type of somatic memory via the molecular net. As Pert[20] emphasizes, past experiences and trauma are of formative influence besides the actual environment. Memories of stress and trauma are connected with persisting arousal of the autonomous nervous system.

Somatic memory and trauma

The first natural reactions to a traumatic event are intensive somatic sensations, emotions such as anxiety and pain, and extreme arousal of the nervous system. The switch from higher brain functions to the autonomic nervous system leaves no opportunity for cognitive integration of the traumatic experience at the time of the event.

The physiological state of nervous system arousal can continue unchanged, however, even if the traumatic challenge has passed. This means that the self-defence system of the traumatized person is in a persistent state of alarm, expecting that the dangerous situation could return at any moment. Consequently, parts of the nervous system are still occupied with managing the past although there is actually no threat to the organism at the present moment. This chronically increased stimulation of the autonomic nervous system persists during sleep and wake states, resulting in massively disturbed sleep, generalized panic symptoms, increased startle response and sensitivity to noise. The nervous system is affected by traumatic events in a long-lasting manner.

A repression of conscious traumatic memory contents can be initiated by intense associated emotions. As emotions are reflected in changes in the molecular net (in particular of neuropeptides) the traumatic experience is stored in the soma this way. In a confined part of the soma this can cause impairment of sensory and motor function, linking dissociation phenomena with the molecules of emotions. Besides mood and emotional states neuropeptides also influence our mind, physical activity and behaviour. However, as Pert claims, these changes are principally reversible by long-term processes and she proposes somatically oriented psychotherapeutic interventions as a way to resolution.[20]

In his book *Biology of Belief*, Dr. Bruce Lipton[21] emphasizes that cell biology is dominated by experience and conviction, whereas the genetic code is of minor importance. In his model, receptor interactions at the cellular membrane determine the fate of the cell: switching between development/growth as one state; and defence/protection as the other. Permanent

stress binds the cell to the state of protection, which comes about through chronically elevated levels of stress hormones, a well-known sequel of trauma.

The inability to solve a threatening situation is "frozen" in the soma, and in this way forms an aspect of somatic memory. Stress and trauma affect all levels of information in the SomaNet, at least transiently but also for long periods of time. It is important to realize that, within the SomaNet, there are interactions and interdependencies between different levels of organization and different subunits, as well as between different levels of information coding (e.g. chemical composition, spatial arrangement, mechanical, electrical, vibrational). Consequently, changes at a single level also affect other components and subunits, or codes of information. These persistent somatic traces represent deviations from the basic state of the organism existing before the traumatic experience. For us there is strong concern that health can be affected adversely by traumatic traces which are frozen in body structures. Certain cellular functions are still engaged with managing the past and are blocked for present tasks. Our physiological balance, integrity and health are influenced by the aftermaths of trauma.

The therapeutic technique of TraumaSomatics®

As information is received, propagated and stored in the SomaNet during the fixation of stress or trauma it also can be used for the resolution of trauma. The SomaNet conceals a deep memory of the triggering traumatic situation which is accessible by the release of frozen somatic patterns during the therapeutic process. Access to the somatic traces of trauma via mindful work with somatic sensations makes the transfer of unconscious somatic memory contents to a conscious level possible. This is a prerequisite for cognitive processing of the traumatic experience and for integration into the episodic and semantic memory systems. The transformation of the structural net, molecular net and the nervous system provides the means for change and for accessing the present moment. Simultaneously, this restores a balance of biological functions in cells and tissues within the whole organism.

The healing system is an active system. It supports those patterns of organization that result in a harmonic and tensionless integrated whole and thus in an identity. The therapist is a necessary companion and witness, equipped with the capability of mindfulness and to be in resonance. This creates a therapeutic field for release and healing.

In the following, four central principles of TraumaSomatics® are described in more detail: the work with somatic sensations, the principle of the working window, the work with coupled processes, and the work with memory systems. In addition, there are specific therapeutic tools that will be the subject of further publications.

Therapeutic work with somatic sensations

The TraumaSomatics® therapist uses the somatic information systems of the SomaNet during the therapeutic process, in particular the "symptoms" of the "excited nervous system" and sensations in the body tissue which are either visible or are verbalized by the client.

We differentiate between three states of somatic sensations:

- State of **coherent sensations** (normal range): the organism matches the stressing situation; no pronounced somatic symptoms.
- State of **chaotic sensations**: the organism finds a solution for the situation although under stress; appearance of typical somatic stress symptoms.
- State of **traumatic sensations**: traumatic shock reactions in body tissue and organs; appearance of typical somatic trauma symptoms.

During the TraumaSomatics® process a very cautious re-experiencing of parts of the traumatic situation on the purely somatic levels of the tissues and the nervous system is supported by the therapist. The client communicates somatic sensations, as well as emotions and thoughts that arise. By observing the client and staying in verbal contact the therapist keeps the process at a purely somatic level. A striking feature is the obvious somatic involvement of the client in the past event as it is re-experienced. During the TraumaSomatics® session the client isn't still or passive, but a multitude of symptoms and movements appear in the soma which are in the focus of the therapeutic process. This represents a fundamental difference to therapeutic strategies which rather aim at a cognitive understanding and neglect the somatic level.

By creating a therapeutic space of mindfulness, the therapist observes and supports the fine

somatic sensations and possible somatic movements of orientation, protection and structural restoration. These can be visible externally as well as perceived internally only. When the perception of the clients is trained they can become aware of very subtle changes, perhaps as small as "microscopic" levels. At this point the process changes from pure abreacting (catharsis) to release and integration.

The principle of the working window

It is also the therapist's task to control the process in a way that it stays in a so-called "working window" so that the client isn't re-traumatized. We do this by a technique called "temporary containment" which is based on a system that separates somatic sensations, symptoms and movements into stress and trauma reactions:

Table 2: Categories of stress and trauma reactions

0	**base state**	calm, relaxed, warm, alert
1	**mild stress**	active, vigilant, uncomfortable, tight
2	**high stress**	panicky, rapid thoughts, very itchy, fast heart beat, constriction, shaking
3	**mild trauma**	dull, depressed, foggy, heavy, fatigued, numbness, coolness, shaking
4	**severe trauma**	lack of sensations, of thoughts, and of emotions; sensations like empty and flat

We invite the clients to stay focussed with their present somatic sensations, but we also track the actual state of the nervous system. We allow mild or high stress reactions to happen, but we prevent the client's system from mild and severe trauma reactions, like frozen or numbness sensations. By separating body sensations into stress or trauma reactions we focus our awareness rather on stress than on trauma symptoms. This allows a slow spontaneous unfolding of somatic sensations, emotions and thoughts.

Often we find a dynamic course of the process, resulting from energetic over- or under-coupling phenomena in the nervous system. This can be difficult to detect. However, directing the client's attention to body sensations decelerates the process allowing the self-organizing somatic intelligence to calm down the nervous system and to restore the structural net to a newly ordered state. Important reorganization phases of somatic memory can be recognized by the somatic perceptions of the client.

Another aspect is the direct link between emotions and the perception of somatic sensations. Experiences of early life phases are dominated by somatic sensations, and learning is needed to assign emotions to these sensations. The TraumaSomatics® process traces emotions back to associated somatic sensations so that trauma-associated emotions are relieved of their overwhelming power. Only in the territory of the working window is a calming down of the nervous system possible, and the reorganisation of information in the structural and molecular nets at the inherent velocity of these systems.

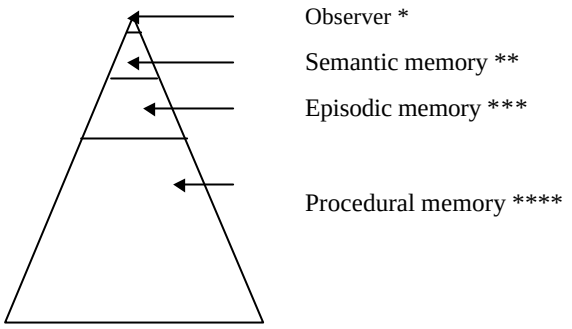
The work with coupled processes

It is important to realize that processes of change are coupled to each other in the SomaNet and in traumatic memory. You can start a therapeutic process with a physical symptom or with an emotion (which is traced back to the associated body sensation). This means you start with information that is coded in the SomaNet and you follow this information. The other way round, you can start with a conscious memory of a traumatic fragment and explore the associated somatic sensations. Staying with the unfolding body sensations or movements it happens that single somatic memory fragments appear that now can complement the conscious memory of the traumatic situation. Simultaneously, as the frozen information is liberated in the SomaNet, relaxation at the different levels of the SomaNet occurs. The client experiences relaxation and fading away of symptoms based on release of connective tissue and muscular tension and decrease of nervous system arousal. Sometimes we have observed changes in tissue structures that resemble the effect of Structural Integration.

It is the experience of the trained TraumaSomatics® therapist that enables him to follow the processes that spontaneously unfold guided by the somatic intelligence of the SomaNet that aims at optimising biological function. In this way a new order can be established in somatic structures becoming more differentiated, more prepared and more protected for future stress or traumatic challenge.

The work with memory systems

Figure 2: The work with the semantic, episodic and procedural memory systems



* The Observer: The self-observing aspect.
** Semantic memory: Assumed and unconscious beliefs and interpretations.
*** Episodic memory: Important events often with an emotional load as e.g. threats, stresses, traumas.
**** Procedural memory: Learned abilities and habits as physical skills, behavior, thoughts, emotional patterns

The episodic memory system

The episodic memory system is biographic and stores important and often emotionally loaded experiences such as traumas. A characteristic of episodic memories is that they can be described in words.

Memories of traumatic events are linked with external "triggers". Post-traumatic symptoms, in particular so-called "flash backs", develop by confrontation with a single trigger in present time. The traumatic situation that took place in the past is experienced again somatically and psychologically as if it were actually taking place at the present moment. For example, if I were to experience a car accident, I would first see a car coming towards me, step on the brake and smell the burning rubber of the tires. I would then feel pain when my head hit the window and hear the splintering of glass. If I later have an experience of hearing glass break, memories of the car accident may return. Just one small detail of a traumatic experience is enough to put the nervous system into the same state of arousal as that earlier trauma. The experience, sensations and thoughts repeat themselves as if the accident were taking place at the moment.

Reorganizing episodic memory occurs by accessing somatic memory. Since the psychological healing system is also a somatic system, a living and dynamic system, we can use the capacity of the SomaNet to generate transitions from dysfunctional to functional states via self-organizing patterns.

The procedural memory system

Acquired habits are stored in the procedural memory system. They are also called "non-explainable" habits. For example, we are able to ride a bicycle, but we aren't able to express in words the procedure of riding a bicycle. Procedural memories are memories of actions and not of descriptions or thoughts. One develops procedural habits by precise repetitions, such as learning a sport or a foreign language. These habits and abilities are learned slowly, but if they are trained, we never forget them or at least never completely.

Procedural memories store deep psychological habits: patterns of behaviour, thinking and emotions which were learned by unconscious repetition. What the child learns to adopt unconsciously appears later as the character of the adult.

Humans with traumatic experiences either could not develop a number of abilities in their early life, or later certain abilities got lost through the traumatic experience. These abilities include the ability to say "no", to set limits, to take responsibility for oneself, and to have confidence. In the therapeutic context we speak of abilities which are weak, damaged or underdeveloped.

Traumatherapeutic work with procedural memory reorganizes and/or establishes abilities so they can become important resources. In specific exercises we train these abilities with the clients. Traumatised clients depend on these abilities everywhere in their life: with family, friends, and on the job. Also in the relationship with the therapist the availability of these abilities is important, particularly if stress or trauma symptoms emerge. When these abilities become more available for our clients this supports an effective therapeutic work. Prerequisites to achieving healing are a good contact to resources and the recovery of abilities.

The semantic memory system

This system contains what we regard normally as "memory", e.g. what we learn at school, insights about ourselves, beliefs and learned information.

In dealing with stress and trauma it is important that we help our clients to find their own autonomy. One way is to explain the therapeutic procedure and the different stages of the therapeutic process so that the client can take an active role with support from the therapist. Another method is to dismiss the client from the victim role and lead him into independence via the cognitive understanding of the past traumatic experience.

The therapeutic techniques of TraumaSomatics® transfer traumatic memories from a somatic level to levels that are accessible for higher brain functions so that the processing of the past can be done cognitively and with verbal expression. Pierre Janet pointed out that the verbalising of memories is important: "It is not enough to be aware of a memory that occurs automatically in response to particular current events: it is also necessary that the personal perception knows this image and attaches it to other memories".[5]

Access to the present moment

To create conditions that support the healing of trauma it is very important to develop and establish the ability to live in the present moment in the client.

When a memory of a past event reappears, we may be slightly surprised to realize that the entire experience of remembering and restoring somatic memories is happening now. We may be experiencing something again, but this experiencing is going on now. Intuitively we feel that we are not back at the time the event happened. The nature of the present moment poses a challenge to the neurosciences. How do we know that something took place in the past? How do we recognize the present now? As Daniel Stern writes, the presence of mind and body is comparable to an "existential affect."[29] Pathological states of dissociation can influence the sense of being in the here-and-now. Dealing with traumatic memories requires a sense of self to be aware of the moment. But where can we experience the presence better than through our body, our tissue and cells?

As long as we are stuck in trauma, because the somatic structures and the nervous system are frozen in the traumatic experience, our mind and psyche are also fixed in arranging with the past. This prevents us from being completely present and managing present life with our full energy. The somatic resolution of trauma by TraumaSomatics® gives access to the present moment and opens a wide space for the development of the self.

References

[1] Schore A, 2001, *The effects of early relational trauma on right brain development, affect regulation, & infant mental health*. Infant Mental Health Journal 22: 201-269

[2] Grigsby J, Stevens D, 2000, *Neurodynamics of personality*. New York, The Guildford Press, Herman J, 1992, *Trauma and Recovery*. New York, Basic Books

[3] Van der Kolk B, McFarlane AC, Weisaeth L (Ed.), 1996, *Traumatic stress. The effects of overwhelming experience on mind, body and society*. New York: The Guildford Press

[4] Wolterstorff E (2003) *A Speculative Model of How Groups Respond to Threats*. Unpublished Manuscript.

[5] Ogden P, 2006, *Trauma and the Body: A Neurobiologically-Informed Approach to Clinical Practice. A Sensorimotor Approach to Psychotherapy*. Norton & Co Ltd

[6] Grassmann H, 2004, *Posttraumatische Übertragungsphänomene im therapeutischen Dialog. Körperpsychologische Grundlagen einer Traumatherapie*. CoMed 04 (In German)

[7] Levine P, 1997, *Waking the Tiger: Healing Trauma*. Berkeley, California: North Atlantic Books

[8] Huber M, 2005a, *Trauma und Traumabehandlung – Teil 1: Trauma und die Folgen*. Paderborn, Germany, Junfermann Verlag (In German)

[9] Rothschild B, 2000, *The Body Remembers: The psychophysiology of trauma and trauma treatment*. Norton Professional Books

[10] Huber M, 2005b, *Trauma und Traumabehandung – Teil 2: Wege der Traumabehandlung*. Paderborn, Germany, Junfermann Verlag (In German)

[11] Reddemann L, Dehner-Rau C, 2004, *Trauma. Folgen erkennen, überwinden und an ihnen wachsen*. Stuttgart, Germany: Trias Verlag (In German)
[12] Barral J-P, Croibier A, 1999, *Trauma An Osteopathic Approach*. Eastland Press, Seattle
[13] Sills F, 2001, *Craniosacral Biodynamics. Volume One: The breath of life, biodynamics, and fundamental skills*. Berkeley, California: North Atlantic Books
[14] Upledger JE, 2005, *The Discovery and Practice of Somatoemotional Release*. Berkeley, California: North Atlantic Books
[15] Ho M-W, 1999, *TheRrainbow and theWorm: The physics of organisms.* World Scientific
[16] Ingber DE, 2003a, *Tensegrity I: Cell structure and hierarchical systems biology*. Journal of Cell Science 116: 1157-1173
[17] Ingber DE, 2003b, *Tensegrity II : How structural networks influence cellular information processing networks.* Journal of Cell Science 116: 1397-1408
[18] Ingber DE, 2003c, *Mechanobiology and diseases of mechanotransduction*. Annals of Medicine 35: 1-14
[19] Oschman JL, 2000, *Energy Medicine: The scientific basis*. London: Churchill Livingstone
[20] Pert C, 1997, *Molecules of Emotion: Why you feel the way you feel.* New York: Scribner
[21] Lipton B, 2005, *The Biology of Belief: Unleashing the Power of Consciousness, Matter and Miracles*. Mountain of Love
[22] Levin SM, 1997, *A different approach to the mechanics of the human pelvis: tensegrity*. In: Mooney V et al. (eds) Movement, Stability and Low Back Pain, pp 157-167, London: Churchill Livingstone
[23] Myers TW, 2001, *Anatomy Trains - Myofascial Meridians for Manual and Movement Therapists*. London: Churchill Livingstone
[24] Schleip R, 2003, *Fascial plasticity – a new neurobiological explanation: Part 1*. Journal of Bodywork and Movement Therapies 7: 11-19
[25] Schmidt RF and Schaible H-G, 2006, *Neuro- und Sinnesphysiologie*. Berlin, Germany: Springer (In German)
[26] Kurtz R, 1990, *Body-centered Psychotherapy: The Hakomi method*. Life Rhythm
[27] Kurtz R, Prestera H, 1991, *Body Reveals: How to read your own body, What your body says about you.* San Francisco: Harper
[28] Lowen A, 1977, *Bioenergetics*. Coventure
[29] Stern D N, 2004, *The present moment.* New York, Norton & Co Ltd.