Foundations of Complex Integration of Multiple Brain Systems and Theory

Complex Integration of Multiple Brain Systems is an innovative psychotherapy paradigm that understands the patient/client's difficulties and potential from a systems perspective.* [See below] The Nervous System is made up of many subsidiary systems. Each system is composed of an elaborate interconnection of neurons connected to each other by synapses. There are more than 10 billion neurons and more than 10 trillion synapses. Our nervous system is made up of many differentiated systems, such as the visual, auditory, parasympathetic and sympathetic nervous systems. Having multiple differentiated systems allows us to take in information from our environment and from within our body to be able to respond to each life situation with specificity, flexibility, and comprehensively.

There are many different systems in our brain [networks of neurons interconnected with each other that contributes to the function of the system to which it belongs]. These systems help us meet the challenges of life – systems that help us attach to people who will keep us safe and nurture us, and later to build close and nourishing relationships; systems that help us recognize and avoid danger; systems that utilize the energy and wisdom of our emotions to guide us; systems to motivate us to work toward what is best for us. When these systems are *not differentiated*, they do not function effectively and often give rise to symptoms of anxiety, depression, mood disorders, physical distress, behavioral problems and other difficulties.

For example, imagine a child who has been repeatedly abandoned in the first 2 years of life. The fear circuits in the amygdala get activated maximally, and repetitively to face this life-threatening danger. This will cause an imbalance [damage] in the regulation of the amygdala, and this damage cannot be erased. Over time the other Brain Systems become wired together with the amygdala, as the nervous system tries to regulate the level of fear and establish some kind of equilibrium. In this example, the child begins to avoid relationships or closeness with others to reduce the level of distress that gets activated when others seek out closeness with him. In this person when the Need for Attachment gets activated it simultaneously activates the fear circuits in the amygdala. In this example the inhibitory Brain Systems are insufficiently differentiated from the relational Brain Systems leading to this pattern of avoidance.

The CIMBS psychotherapy process focuses on five principal Brain Systems: the Core Consciousness, Motivational, Relational, Inhibitory and Emotional/Somatosensory Brain Systems. And the process pays particular attention to the Core Consciousness. Here the term Core Consciousness refers to the mind's ability to focus attention, and to be aware of thoughts and feelings that are happening in the present moment. If the Core Consciousness is not sufficiently activated, the person's experience can be dominated by emotions, drives, reactions, or inhibitions. When the Core Consciousness is sufficiently differentiated, the person is able to be more accepting of their present emotional state, they respond with

spontaneity and authenticity. They feel their own authority and they can make choices to move forward in their lives even in the face of many inhibitory forces.

The vast majority of the information in the brain is processed unconsciously. We do not have to think about how to walk. Our minds are constantly taking in information from our environment and from our muscles and joints to coordinate the very complex behavior of walking down a sidewalk. We can only be aware of a very small part of the information necessary to accomplish this behavior. The unconscious processing of this behavior is referred to as implicit processing [implicit procedural memory]. It is primarily based on learning that took place when we were first learning to walk as toddlers. The same type of learning took place when we learned to experience our emotions, motivations and relationships with other people. This type of learning is very efficient and effective for all animals and especially for us as humans. However at times some of that learning was traumatic and if repeated often enough it will lead to constraints between different Brain Systems as mentioned above.

The CIMBS approach to psychotherapy works very carefully to differentiate the incoming information of the present life experience from the implicit learning of previous development. An example of the incoming information in the therapy process would be the fact that the therapist is paying attention to the patient/client with interest, curiosity and concern. However because of previous learning the patient/client 's implicit processing might experience that attention as critical, indifferent or hostile. This differentiation can be quite difficult because the incoming data is incoherent with reference to the implicit processing that is happening unconsciously. So the patient/client might experience the therapist's interest as quite uncomfortable, even as they are seeking that attention at the same moment.

How do we evaluate this unconscious implicit processing in the patient/client? In CIMBS we pay very careful attention to psychophysiological phenomena that reveal evidence of the unconscious processing of different Brain sSystems. Examples of the psychophysiological evidence we look for are: tone of voice, respiration rate and type, eye contact, eye blinking, pupil dilation, body movements, and so on. We observe and evaluate psychophysiologic evidence and psychophysiologic shifts that inform us about how the patient/client's multiple Brain Systems are processing unconscious information at this moment in time.

Emotions and feelings are a very important part of our life experiences and can often be a source of significant distress. Most psychotherapy approaches deal with emotions and feelings directly and attempt to mirror, support, or deepen the client's experience of emotions. In contrast, CIMBS focuses on broadening the client's experience beyond the emotional/somatosensory Brain Systems to include other Brain Systems such as the core consciousness, relational, motivational, and inhibitory Brain Systems with the intention and goal to build increasing complexity in the patient/client's Brain. In CIMBS we prioritize building increasing complexity through careful activation of other Brain Systems rather than focusing primarily on the emotions. The goal here is to enable the brain to have many parallel processing circuits to manage the intensity of emotions in the present and differentiate present emotional experience from previous implicit emotional learning. This enables the client to override previous automatic patterns and make mindful choices in emotionally stressful situations. In addition the attachment relationship with the therapist is prioritized to minimize the client's tendency to withdraw into their emotions when they become activated.

Every patient/client who comes for therapy has some level of conscious and unconscious anxiety. By reading the evidence of the psychophysiological phenomena, the therapist can make assessments about the functioning of the different Brain Systems. It will also provide non-verbal evidence of some of the underlying difficulties for this person. In CIMBS we seek to have the patient/client collaborate with us in helping them observe and regulate their own anxiety. This co-regulation of emotions, anxieties and other inhibitions speeds the learning, reduces the intensity of the distress, and further adds to the complexity developing in the patient/client's mind

A significant majority of the time and energy in the CIMBS approach is spent working in the *present moment*. In CIMBS this means the present moment of the different Brain Systems that are being activated by the attention of the therapist and the patient/client to the non-conscious processing of this person. This is different from the present moment of experiencing or talking about the distress from an event yesterday or 20 years ago. For example, this focus helps us differentiate the actual incoming information of the therapist's positive regard for the patient/client from the unconscious fear or distress that the patient/client is experiencing simultaneously from previous learning [implicit memory processing].

In CIMBS the nature of the therapy relationship is the center of attention for the therapist from the first seconds of each and every session. The energy of the therapist's attention, curiosity, interest and concern will activate Multiple Brain Systems in the patient/client disclosing what are the Brain Systems that are 'wired together'. [Hebb principle: 'neurons that fire together wire together.'] This information provides unconscious evidence of the past emotional, relational history of this person, often revealing implicit learning that is preverbal or prior to explicit memory. The strength of this unconditional positive regard is a major source of unconscious activation of Multiple Brain Systems. The collaboration between the partners in the therapeutic dyad is made explicit repeatedly. Many Psychotherapists who have experienced CIMBS describe how their physical and emotional experience is much more intimate than any other psychotherapy that they have seen or experienced.

The CIMBS therapist is highly selective in the choice of interventions. The interventions are short and focused on one specific part of the process or the patient/client. The specific interventions are directed to: mobilize the patient/client to collaborate on the therapeutic task, to deepen the therapeutic connection with the therapist and themselves, to activate approach Brain Systems, to differentiate one Brain System from another, to activate specific neurotransmitter systems [dopamine, serotonin, oxytocin, GABA, acetylcholine, etc.] to gather more data on unconscious processing, and to test therapy hypotheses. We intervene to gather more evidence from the client's psychophysiological reactions to the therapist's interventions. When there is a psychophysiological shift in the therapy process, we know that something has changed internally, unconsciously and this is a window of opportunity to test our hypotheses about the implicit processing and the incoming data processing in this patient/client at this moment. Many of the interventions of CIMBS are designed to maximize the potential of neuroplasticity [the ability of the mind to change the structure and function of the brain] of this person's brain and extended nervous system to speed the healing and the unconscious learning.

This different paradigm has incorporated the latest research in neuroscience. For example:

1. "Practically every brain system changes with use and disuse." [Panksepp] In CIMBS we selectively activate Brain Systems in new, differentiated and flexible ways.

2. "Interactions between the amygdala and nucleus accumbens contribute to motivation, especially motivation by positive incentives." [LeDoux] In CIMBS we focus mainly in the positive activations, strengths, and approach capacities, thereby harnessing the positive and adaptive neuropathways.
3. "There is ample evidence that the processing of stimuli is controlled by top-down influences that strongly shape the experience of sensory events. [Engle, Fries, and Singer] "The Brain waits for the body to report what actually transpired. The body landscape is always new and is not stereotyped**."** [bottom-up processing in the present moment] [Damasio] In CIMBS we constantly focus on bringing into awareness the bottom-up processing of the present moment and thus loosening the control and constraints of top-down implicit learning.
4. "Once an emotional habit is well learned the Brain Systems involved in expressing it become simpler. The amygdala, for example, drops out of the circuit." [LeDoux] In CIMBS we are enabling the client to be 'off-balance' so that they are no longer limited by their emotional habits, but are having to recruit Multiple Brain Systems to achieve new neural patterns to establish increasing flexibility and complexity.
5. "Willful, mindful effort can alter brain function and that such self-directed brain changes- neuroplasticity- are a genuine reality. The power of active mental processes like attention and will, will redirect thoughts and actions in a way that is detectable on brain scans. Through directed mental force, what begins as fragile, undependable new neuropathways gradually becomes stronger." [Schwartz] What makes CIMBS successful is specific activation of willful, mindful and attentive neural circuits to create new emergent patterns, reinforce those patterns and establish a new Complex Integration of Multiple Brain Systems.

When we help the patient/client differentiate the processing of incoming data from the implicit processing, the patient/client will feel 'off balance'. For example if a person severely fractured their femur as a child, they would have needed to walk with a crutch for a long time while the healing took place. If they did not get adequate physical therapy after their fracture healed, they might not get back the full range of motion of their hip and still need to walk with a crutch. The physical therapy enables our bodies to no longer rely on a crutch to walk and stabilizes us as we establish a new internal balance. CIMBS approaches the non-conscious processing of this person with the same care and compassion to reduce the constraints of implicit processing [from old intrapsychic injuries] to achieve new levels of flexibility, spontaneity and authenticity. This liberates the client/patient/client to achieve a new trajectory of growth that will continue long after the therapy is completed.

Working in this way will free the mind to move towards greater complexity and harmonious flow; a mind that is at once flexible, adaptive, coherent, energized and stable.

Activation and differentiation of Multiple Brain Systems enables the client to come to a new Integration of more Complex and flexible mental functioning. This leads to a new trajectory of growth and adaptive functioning where the client/patient achieves their best potential for the present, and freedom to continue maximizing further development in the future.

*We have 'Painted it Red' to highlight where CIMBS **is a change of paradigm.**