RIGHT BRAIN AFFECT REGULATION:
AN ESSENTIAL MECHANISM OF DEVELOPMENT,
TRAUMA, DISSOCIATION, AND PSYCHOTHERAPY
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THE HEALING POWER OF EMOTION:
INTEGRATING RELATIONSHIPS, BODY AND MIND
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There is currently an increasing awareness, indeed a palpable sense that a number of clinical disciplines are simultaneously undergoing a significant transformation, a paradigm shift. A powerful engine for the increased energy and growth in the mental health field is the ongoing dialogue it is having with neighboring disciplines, especially developmental science, biology, and
neuroscience. This mutually enriching communication is centered on a common interest in the primacy of affect in the human condition. In the present interdisciplinary environment psychological studies on the critical role of emotional contact between humans are now being integrated with biological studies on the impact of these relational interactions on brain systems that regulate emotional bodily-based survival functions. In a recent editorial of the journal *Motivation and Emotion*, Richard Ryan asserts,

> After three decades of the dominance of cognitive approaches, motivational and emotional processes have roared back into the limelight...More practically, cognitive interventions that do not address motivation and emotion are increasingly proving to be short-lived in their efficacy, and limited in the problems to which they can be applied. (2007, p. 1)

Although Sigmund Freud (1915), the creator of psychotherapy argued that this work is always concerned with affect, until recently all conceptualizations of the psychotherapeutic change process have been dominated by models of cognition, too frequently focused only on verbal, conscious cognition. During the period of cognitive dominance, clinical applications of advances in theory mainly involved an attempt to construct more efficient interpretations, in order to more effectively make unconscious content conscious to the patient. This emphasis on verbal content and insight as the major change mechanism thereby focused on improving the analytic processing of the patient’s (and therapist’s) left hemisphere.
In contrast to the prevailing privileged status of verbal, conscious cognition, in my first book I suggested that emotional communications between therapist and patient lie at the psychobiological core of the therapeutic alliance, and that right brain-to-right brain emotional processes are essential to development, psychopathology, and psychotherapy (Schore, 1994). Indeed, very recent clinical research reports that the more therapists facilitate the affective experience/expression of patients in psychotherapy, the more patients exhibit positive changes, and that therapist affect facilitation is a powerful predictor of treatment success (Diener et al., 2007). In chapter after a brief introduction I will discuss updates of my work on the essential right brain process of nonconscious affect regulation in development, in psychopathogenesis and trauma-dissociation, and finally in the interpersonal neurobiology of a number of essential right brain processes that lie at the core of the change process of psychotherapy.

Introduction: Regulation Theory and the Primacy of Affect

In a recent volume on Regulation Theory I concluded,

Affective processes appear to lie at the core of the self, and due to the intrinsic psychobiological nature of these bodily-based phenomena recent models of human development, from infancy throughout the lifespan, are moving towards brain-mind-body conceptualizations. These models are redefining the essential characteristics of what
makes us uniquely human. (Schore, 2003b, xiv)

Indeed a central theme running throughout all my work is the exploration of the primacy of affective processes in various critical aspects of the human experience. In a large body of writings over a broad range of disciplines my studies in affective and developmental neuroscience have suggested that the socioemotional functions of the right hemisphere, the “locus of emotional brain,” are dominant in relational contexts at all stages of the life span.

In my neuropsychoanalytic writings I have integrated a large body of clinical and neurobiological data to argue that the right brain implicit self represents the biological substrate of human unconscious described by Freud, previously termed “psychic structure.” It is now clear that a primary function of the system $Ucs$ is the processing of bodily-based affective information associated with various motivational states. Lichtenberg observes a central focus of the psychotherapeutic encounter:

To appreciate the patient’s motivation, we need to...discern the emotional experience he or she seeks. At times, the goal sought will be self-evident to patient and [therapist]. At other times, the goal will lie out of awareness and will be difficult to ascertain...The golden thread in assessing motivation lies in discovering the affect being sought in conjunction with the behavior being investigated. (2001, p. 440, my italics)

There is now a growing body of evidence which indicates that, “In most people, the verbal, conscious and serial information processing takes place in the left
hemisphere, while the unconscious, nonverbal and emotional information processing mainly takes place in the right hemisphere” (Larsen et al., 2003, p. 534).

Relevant to the renewed interest in emotion in models of the change process in both development and psychotherapy, the right hemisphere is dominant for the recognition of emotions, the expression of spontaneous and intense emotions, and the nonverbal communication of emotions (see Schore, 2003a,b for references). The central role of this hemisphere in survival functions is outlined by Schutz:

The right hemisphere operates a distributed network for rapid responding to danger and other urgent problems. It preferentially processes environmental challenge, stress and pain and manages self-protective responses such as avoidance and escape...Emotionality is thus the right brain’s ‘red phone,’ compelling the mind to handle urgent matters without delay. (2005, p. 15)

Furthermore, an important ongoing trend in interdisciplinary studies is on not just emotion but unconscious emotion. Freud speculated, “Unconscious ideas continue to exist after repression as actual structures in the system Ucs, whereas all that corresponds in that system to unconscious affects is a potential beginning which is prevented from developing” (1915, p. 178). In my own work on unconscious affect I have suggested that bodily-based affects are “the center of empathic communication,” and that “the regulation of conscious and unconscious feelings is placed in the center of the clinical stage” (Schore, 1994). In later points
of this chapter I will argue that unconscious affects can be best understood as not repressed but dissociated affects.

Although this topic has been controversial, neuroscience now demonstrates a “right hemispheric dominance in processing of unconscious negative emotion” (Sato & Aoki, 2006). Other studies now document a “cortical response to subjectively unconscious danger” (Carretie, 2005). For example, basic research on the neurobiology of survival mechanisms clearly shows that the emotion of fear “is not necessarily conscious; a fearful response may be evoked even when one is not fully aware of being ‘afraid’...As with emotion itself, the enhanced memory for emotional experiences may proceed at a relatively subconscious level, without clear awareness” (Price, 2005, p. 135).

Neurobiological studies also demonstrate that the right cortical hemisphere is centrally involved in “the processing of self-images, at least when self-images are not consciously perceived” (Theoret et al., 2004, p. 57). Deep psychotherapeutic changes alters not only conscious but unconscious self image associated with nonconscious internal working models of attachment. Both unconscious negative emotions and unconscious self-images are important elements of the psychotherapy process, especially with the more severe self pathologies.

Thus, the essential roles of the right brain in the “unconscious processing of emotional stimuli” and in “emotional communication” are directly relevant to recent clinical models of an “affective unconscious” and a “relational unconscious,” whereby “one unconscious mind communicates with another
unconscious mind” (Schore, 2003a). In a number of writings I have described in some detail the fundamental role of right brain-to-right brain communications across an intersubjective field embedded within the therapeutic alliance (Schore, 1994, 2002a, 2005a, 2007). This dialogue of ultra-rapid bodily-based affective communications in patient-therapist (and infant-mother) attachment transactions occurs beneath levels of conscious awareness of both members of dyad.

Another area of common intense interdisciplinary interest is the self-regulation of emotion. Affect regulation is usually defined as the set of control processes by which we influence, consciously and voluntarily, the emotions we have, and how we experience and behaviorally express them. However, “Most of moment to moment psychological life occurs through nonconscious means...various nonconscious mental systems perform the lion’s share of the self-regulating burden, beneficently keeping the individual grounded in his or her environment” (Bargh & Chartrand, 1999, p. 462). Applying this principle to psychotherapy, Ryan notes, “Both researchers and practitioners have come to appreciate the limits of exclusively cognitive approaches for understanding the initiation and regulation of human behavior” (2007, p. 1). Indeed a large body of data suggests unconscious affect regulation is more essential than conscious emotion regulation in human survival functions (Schore, 1994; 2003a,b; 2007). There is agreement amongst both scientists and clinicians that this essential adaptive capacity evolves in early attachment experiences:

The developmental achievement of a sense of self that is simultaneously fluid and robust depends on how well the capacity for
affect regulation and affective competency has been achieved...When these early patterns of interpersonal interaction are relatively successful, they create a stable foundation for relational affect regulation that is internalized as nonverbal and unconscious. Thus, further successful negotiation of interpersonal transactions at increasingly higher levels of self-development and interpersonal maturity is made possible. (Bromberg, 2006, p. 32)

Right Brain Processes in Development: the Interpersonal Neurobiology of Secure Attachment

As summarized in a recent contribution on modern attachment theory (J. Schore & A. Schore, 2007), the essential task of the first year of human life is the creation of a secure attachment bond between the infant and his/her primary caregiver. Secure attachment depends upon the mother’s sensitive psychobiological attunement to the infant’s dynamically shifting internal states of arousal. Through visual-facial, gestural, and auditory-prosodic communication, caregiver and infant learn the rhythmic structure of the other and modify their behavior to fit that structure, thereby co-creating a “specifically fitted interaction.” Congruent with the above-discussed models of nonconscious communication, developmental researchers now describe this nonverbal intersubjective communication:
Preverbal communication...is the realm of non-consciously regulated intuitive behavior and implicit relational knowledge. Whether information is transferred or shared, which information gets across, and on which level it is ‘understood’, does not necessarily depend on the sender’s intention or conscious awareness. (Papousek, 2007, p. 258)

During these bodily-based affective communications the attuned mother synchronizes the spatiotemporal patterning of her exogenous sensory stimulation with the infant’s spontaneous expressions of endogenous organismic rhythms. Via this contingent responsivity, the mother appraises the nonverbal expressions of her infant’s internal arousal and affective states, regulates them, and communicates them to the infant. To accomplish this, the mother must successfully modulate nonoptimal high or nonoptimal low levels of stimulation which would induce supra-heightened or extremely low levels of arousal in the infant.

In play episodes of affect synchrony, the pair are in affective resonance, and in such, an amplification of vitality affects and a positive state occurs. In moments of interactive repair the “good-enough” caregiver who has misattuned can regulate the infant’s negative state by accurately re-attuning in a timely manner. The regulatory processes of affect synchrony that creates states of positive arousal and interactive repair that modulates states of negative arousal are the fundamental building blocks of attachment and its associated emotions,
and resilience in the face of stress and novelty is an ultimate indicator of attachment security (Schore, 2005b).

These adaptive capacities are central to the dual processes of self-regulation: interactive regulation, the ability to flexibly regulate psychobiological states of emotions through interactive regulation with other humans in interconnected contexts, and through autoregulation, which occurs apart from other humans in autonomous contexts. According to Pipp and Harmon, “It may be that...we are biologically connected to those with whom we have close relationships....Homeostatic regulation between members of a dyad is a stable aspect of all intimate relationships throughout the lifespan” (1987, p. 651). The evolutionary mechanism of attachment, the interactive regulation of emotion, thus represents the regulation of biological synchronicity between and within organisms (Bradshaw & Schore, 2007).

In line with earlier proposals that emotional attachment experiences during early critical periods of development facilitate the experience-dependent maturation of emotion regulatory brain circuits (Schore, 1994), neuroscientists now assert:

[T]he mother functions as a regulator of the socio-emotional environment during early stages of postnatal development...subtle emotional regulatory interactions, which obviously can transiently or permanently alter brain activity levels...may play a critical role during the establishment and maintenance of limbic system circuits. (Ziabreva et al., 2003, p. 5334)
It is well-established that the human central nervous system (CNS) limbic system extensively myelinates in the first year-and-a-half and that the early-maturing right hemisphere - which is deeply connected into the limbic system - undergoes a growth spurt at this time (Allman et al., 2005; Bogolepova and Malofeeva, 2001; Chiron et al. 1997; Geschwind & Galaburda, 1987; Gupta et al., 2005; Howard and Reggia, 2007; Moskal et al., 2006; Sun et al., 2005).

The right hemisphere also has tight connections with the involuntary autonomic nervous system (ANS) that controls visceral organs, effectors in the skin, and the cardiovascular system, and is responsible for the generation of vitality affects. Via a right hemisphere vagal circuit of emotion regulation, “the right hemisphere - including the right cortical and subcortical structures - would promote the efficient regulation of autonomic function via the source nuclei of the brain stem.” (Porges, Doussard-Roosevelt, & Maiti, 1994). Affect regulating attachment experiences specifically impact cortical and limbic-autonomic circuits of the developing right cerebral hemisphere (Cozolino, 2002; Henry, 1993; Schore, 1994, 2005b; Siegel, 1999). For the rest of the lifespan internal working models of the attachment relationship with the primary caregiver, stored in the right brain, encode strategies of affect regulation that nonconsciously guide the individual through interpersonal contexts.

Earlier speculations (Schore, 1994) are now supported by current studies which observe that right laterialized limbic areas responsible for the regulation of autonomic functions and higher cognitive processes are involved in the “formation of social bonds” and are “part of the circuitry supporting human
social networks,” and that the “the strong and consistent predominance for the right hemisphere emerges postnatally” (Allman et al., 2005, p. 367). Summarizing this data, Rotenberg concludes,

> The main functions of the right hemisphere...the ability to grasp the reality as a whole; the emotional attachment to the mother (Schore, 2003); the regulation of withdrawal behavior in the appropriate conditions (Davidson, 1992); the integration of affect, behavior and autonomic activity (Schore, 2003) are the basic functions of survival (Saugstad, 1998) and for this reason are the first to appear. (2004, p. 864)

**Right Brain Processes in Psychopathogenesis: the Interpersonal Neurobiology of Attachment Trauma and Dissociation**

During the brain growth spurt (last trimester pregnancy through second year) relational trauma-induced arousal dysregulation precludes the forementioned facial-visual, auditory-prosodic, and tactile-gestural attachment communications and alters the development of essential right brain functions. In contrast to an optimal attachment scenario, in a relational growth-inhibiting early environment the primary caregiver induces traumatic states of enduring negative affect in the child. This caregiver is inaccessible and reacts to her infant’s expressions of emotions and stress inappropriately and/or rejectingly, and therefore shows minimal or unpredictable participation in the various types of arousal regulating
processes. Instead of modulating she induces extreme levels of stimulation and arousal, very high in abuse and/or very low in neglect. And because she provides no interactive repair the infant’s intense negative affective states last for long periods of time.

Interdisciplinary evidence indicates that the infant’s psychobiological reaction to trauma is comprised of two separate response patterns, hyperarousal and dissociation. In the initial hyperarousal stage, the maternal haven of safety suddenly becomes a source of threat, triggering an alarm or startle reaction in the infant’s right hemisphere, the locus of both the attachment system and the fear motivational system. The maternal stressor activates the hypothalamic-pituitary-adrenal (HPA) stress axis, thereby eliciting a sudden increase of the energy-expending sympathetic component of the infant’s autonomic nervous system (ANS), resulting in significantly elevated heart rate, blood pressure, and respiration, the somatic expressions of a dysregulated hypermetabolic psychobiological state of fear-terror.

But a second later forming reaction to relational trauma is dissociation, in which the child disengages from stimuli in the external world - traumatized infants are observed to be “staring off into space with a glazed look.” This parasympathetic dominant state of conservation-withdrawal occurs in helpless and hopeless stressful situations in which the individual becomes inhibited and strives to avoid attention in order to become "unseen" (Schore, 1994, 2001). The dissociative metabolic shutdown state is a primary regulatory process, used throughout the life span, in which the stressed individual passively disengages
in order to conserve energies, foster survival by the risky posture of feigning death, and allow restitution of depleted resources by immobility. In this passive hypometabolic state heart rate, blood pressure, and respiration are decreased, while pain numbing and blunting endogenous opiates are elevated. It is this energy-conserving parasympathetic (vagal) mechanism that mediates the “profound detachment” of dissociation.

In fact there are two parasympathetic vagal systems in the brainstem medulla. The ventral vagal complex rapidly regulates cardiac output to foster fluid engagement and disengagement with the social environment, and exhibits rapid and transitory patterns associated with perceptive pain and unpleasantness, all aspects of a secure attachment bond of emotional communication. On the other hand, activity of the dorsal vagal complex is associated with intense emotional states and immobilization, and is responsible for the severe hypoarousal and pain blunting of dissociation (see Figure 1). The traumatized infant’s sudden state switch from sympathetic hyperarousal into parasympathetic dissociation is described by Porges as:

…the sudden and rapid transition from an unsuccessful strategy of struggling requiring massive sympathetic activation to the metabolically conservative immobilized state mimicking death associated with the dorsal vagal complex (1997, p. 75).
Porges (1997) describes the involuntary and often prolonged characteristic pattern of vagal outflow from the dorsal vagal nucleus. This prolonged state of dorsal vagal parasympathetic activation accounts for the extensive duration of “void” states associated with pathological dissociative detachment (Allen, Console, & Lewis, 1998), and for what Bromberg (2006) calls dissociative “gaps” in subjective reality, “spaces” that surround self-states and thereby disrupt coherence among highly affectively charged states. These “gaps” are also discussed in the developmental psychoanalytic literature. Winnicott (1958) notes...
that a particular failure of the maternal holding environment causes a discontinuity in the baby’s need for “going-on-being,” and Kestenberg (1985) refers to as “dead spots” in the infant's subjective experience, an operational definition of the restriction of consciousness of dissociation. At all points of the life span dissociation is conceptualized as “a basic part of the psychobiology of the human trauma response: a protective activation of altered states of consciousness in reaction to overwhelming psychological trauma” (Loewenstein, 1996, p. 312).

Dissociation in infants has been studied with the still-face procedure, an experimental paradigm of traumatic neglect. In the still-face, the infant is exposed to a severe relational stressor: the mother maintains eye contact with the infant, but she suddenly totally inhibits all vocalization and suspends all emotionally-expressive facial expressions and gestures. This intense relational stressor triggers an initial increase of interactive behavior and arousal in the infant. According to Tronick (2004), the infant’s confusion and fearfulness at the break in connection is accompanied by the cognition that “this is threatening.” This stress response is then followed by bodily collapse, loss of postural control, withdrawal, gaze aversion, sad facial expression, and self-comforting behavior.

Most interestingly, this behavior is accompanied by a “dissipation of the infant’s state of consciousness” and a diminishment of self-organizing abilities that reflect “disorganization of many of the lower level psychobiological states, such as metabolic systems.” Tronick (2004) suggests that infants who have a history of chronic breaks of connections exhibit an “extremely pathological state”
of emotional apathy. He equates this state with equated with Spitz’s cases of hospitalism, Harlow’s isolated monkeys, Bowlby’s withdrawn children, and Roumanian orphans who fail to grow and develop. Such infants ultimately adopt a communication style of “stay away, don’t connect.” This defensive stance is a very early-forming, yet already chronic, pathological dissociation that is associated with loss of ventral vagal activation and dominance of dorsal vagal parasympathetic states.

In parallel to still-face studies, ongoing attachment research underscores a link between frightening maternal behavior, dissociation, and disorganized infant attachment (Schuengel, Bakersmans-Kranenburg, & Van IJzendoorn, 1999). Hesse and Main (1999) point out that the disorganization and disorientation of type “D” attachment associated with abuse and neglect phenotypically resembles dissociative states. In recent work, Hesse and Main observe that when the mother enters a dissociative state, a fear alarm state is triggered in the infant. The caregiver’s entrance into the dissociative state is expressed as “parent suddenly completely ‘freezes’ with eyes unmoving, half-lidded, despite nearby movement; parent addresses infant in an ‘altered’ tone with simultaneous voicing and devoicing.” (2006, p. 320). In describing the mother as she submits to the freeze state, they note:

Here the parent appears to have become completely unresponsive to, or even aware of, the external surround, including the physical and verbal behavior of their infant...[W]e observed one mother who
remained seated in an immobilized and uncomfortable position with her hand in the air, blankly staring into space for 50 sec. (p. 321)

In an EEG study of 5-month-old infants looking at a “blank face” Bazhenova et al. (2007) report increases in vagal activity “over the right posterior temporal scalp area and over anterior scalp areas…This observation suggests greater right hemisphere involvement in face processing during blank face” (p. 73).

During these episodes of the intergenerational transmission of attachment trauma the infant is matching the rhythmic structures of the mother’s dysregulated arousal states. This synchronization is registered in the firing patterns of the stress-sensitive corticolimbic regions of the right brain, dominant for survival (Wittling & Schweiger, 1993). Adamaec, Blundell, and Burton (2003) reported findings that “implicate neuroplasticity in right hemispheric limbic circuitry in mediating long-lasting changes in negative affect following brief but severe stress” (p. 1264). Gadea et al. (2005, p. 136) conclude that an intense experience “might interfere with right hemisphere processing, with eventual damage if some critical point is reached.” Recall that right cortical areas and their connections with right subcortical structures are in a critical period of growth during the early stages of human development. The massive ongoing psychobiological stress associated with unregulated attachment trauma sets the stage for the characterological use of right brain pathological dissociation over all subsequent periods of human development.

In the neuropsychoanalytic literature Watt contends, “If children grow up with dominant experiences of separation, distress, fear and rage, then they will
go down a bad pathogenic developmental pathway, and it’s not just a bad psychological pathway but a bad neurological pathway” (2003, p. 109). Neurobiological research on patients with a history of relational trauma also demonstrates continuity over the course of the life span of the expression of this primitive autoregulation defense. It is commonly accepted that early childhood abuse specifically alters limbic system maturation, producing neurobiological alterations that act as a biological substrate for a variety of psychiatric consequences, including affective instability, inefficient stress tolerance, memory impairment, and dissociative disturbances (Schore, 2001a, 2002b).

In a transcranial magnetic stimulation study of adults Spitzer et al. report, “In dissociation-prone individuals, a trauma that is perceived and processed by the right hemisphere will lead to a ‘disruption in the usually integrated functions of consciousness’” (2004, p. 168). And in functional magnetic resonance imaging research Lanius et al. (2005) show predominantly right-hemispheric activation in PTSD patients while they are dissociating, and conclude that patients dissociate in order to escape from the overwhelming emotions associated with the traumatic memory, and that dissociation can be interpreted as representing a nonverbal response to the traumatic memory.

These and other studies are presently exploring the evolution of a developmentally impaired regulatory system over all stages of life, and provide evidence that prefrontal cortical and limbic areas of particularly the right hemisphere are centrally involved in the deficits in mind and body associated with a pathological dissociative response. This hemisphere, more so than the
left, is densely reciprocally interconnected with emotion processing limbic regions, as well as with subcortical areas that generate both the arousal and autonomic (sympathetic and parasympathetic) bodily-based aspect of emotions (see Figure 2). Sympathetic nervous system activity is manifest in tight engagement with the external environment and high level of energy mobilization and utilization, while the parasympathetic component drives disengagement from the external environment and utilizes low levels of internal energy (Recordati, 2003). These components of the ANS are uncoupled in traumatic states of pathological dissociation.

In line with the current shift from cold cognition to the primacy of bodily-based affect, clinical research on dissociation is focusing on “somatoform dissociation.” According to Nijenhuis (2000) somatoform dissociation is an outcome of early onset traumatization, expressed as a lack of integration of sensorimotor experiences, reactions, and functions of the individual and his/her self-representation. Thus, “dissociatively detached individuals are not only detached from the environment, but also from the self - their body, their own actions, and their sense of identity “ (Allen et al., 1999, p. 165). This observation describes impaired functions of the right hemisphere, the locus of the “emotional” or “corporeal self.” Crucian et al. describes “a dissociation between the emotional evaluation of an event and the physiological reaction to that event, with the process being dependent on intact right hemisphere function” (2000, p. 643).”
I have offered interdisciplinary evidence which indicates that the implicit self, equated with Freud’s System Ucs, is located in the right brain (Schore, 1994, 2003b, 2005). The lower subcortical levels of the right brain (the deep unconscious) contain all the major motivational systems (including attachment, fear, sexuality, aggression, etc.) and generate the somatic autonomic expressions and arousal intensities of all emotional states. On the other hand, higher orbitofrontal-limbic levels of the right hemisphere generate a conscious emotional state that expresses the affective output of these motivational systems. This right lateralized hierarchical prefrontal system, the system Pcs, performs an essential adaptive motivational function - the relatively fluid switching of internal bodily-based states in response to changes in the external environment that are nonconsciously appraised to be personally meaningful.

On the other hand, pathological dissociation, an enduring outcome of early relational trauma, is manifest in a maladaptive highly defensive rigid, closed system, one that responds to even low levels of intersubjective stress with parasympathetic dorsal vagal parasympathetic heart rate hypoarousal and deceleration. This fragile unconscious system is susceptible to mind-body metabolic collapse and thereby a loss of energy-dependent synaptic connectivity within the right brain, expressed in a sudden implosion of the implicit self and a rupture of self-continuity. This collapse of the implicit self is signaled by the amplification of the parasympathetic affects of shame and disgust, and by the cognitions of hopelessness and helplessness. Because the right hemisphere
mediates the communication and regulation of emotional states, the rupture of intersubjectivity is accompanied by an instant dissipation of safety and trust.

Dissociation thus reflects the inability of the vertical axis of the right brain cortical-subcortical implicit self system (see Figure 2) to recognize and process external stimuli (exteroceptive information coming from the relational environment) and on a moment-to-moment basis integrate them with internal stimuli (interoceptive information from the body, somatic markers, the “felt experience”). This failure of integration of the higher right hemisphere with the lower right brain induces an instant collapse of both subjectivity and intersubjectivity. Stressful affects, especially those associated with emotional pain are thus not experienced in consciousness (Schore, in press).
Kalsched (2005) describes operations of defensive dissociative processes used by the child during traumatic experience by which “Affect in the body is
severed from its corresponding images in the mind and thereby an unbearably painful meaning is obliterated.” There is now agreement that “traumatic stress in childhood could lead to self-modulation of painful affect by directing attention away from internal emotional states” (Lane et al., 1997, p. 840). The right hemisphere is dominant not only for regulating affects, but also for attention (Raz, 2004), negative affect and pain processing (Symonds et al., 2006), and so the right brain strategy of dissociation represents the ultimate defense for blocking conscious awareness of emotional pain. If early trauma is experienced as “psychic catastrophe,” the auto regulatory strategy of dissociation is expressed as “detachment from an unbearable situation,” “a submission and resignation to the inevitability of overwhelming, even psychically deadening danger,” and “a last resort defensive strategy” (Schore, in press). It thus represents a major obstacle to the change process in affectively focused psychotherapy.

Right Brain Processes in Psychotherapy: Unconscious Affect, Transference, and Primary Process

At the beginning of this chapter I suggested that the regulation of not only conscious but also unconscious affects is an essential mechanism of the psychotherapeutic change process. All forms of therapy currently view affect dysregulation as a fundamental condition of every psychiatric disorders (Taylor et al., 199), including personality disorders (Sarkar & Adshead, 2006), and therefore share a common goal of improving the effectiveness of emotional self-
regulatory processes (Beauregard, 2001). In terms of regulation theory defense mechanisms are forms of emotional regulation strategies for avoiding, minimizing, or converting affects that are too difficult to tolerate. Treatment, especially of early forming severe psychopathologies, must attend to not only to conscious dysregulated affects but also to the early forming survival defense that protects patients from consciously experiencing overwhelming painful negative affects - dissociation. It thus represents the major counterforce to the emotional-motivational aspects of the change process in psychotherapy (Schore, 2007). This clinical principle is supported by research which shows that insecurely attached dissociative patients dissociate as a response to negative emotions arising in psychodynamic psychotherapy, leading to a less favorable treatment outcome (Spitzer et al., 2007).

In light of clinical studies of psychiatric patients reporting that severe early maternal dysfunction is associated with level of dissociation (Draijer & Langeland, 1999), and that physical abuse and parental dysfunction by the mother - not the father - is associated with somatoform dissociative experience (Roelofs et al., 2002), I suggest that pathological dissociation always represents (re-) activation of maternal preoedipal attachment dynamics. In other words, in the therapeutic context later forming repression is associated with Oedipal dynamics and the left hemispheric inhibition of affects generated by the right brain, while early forming dissociation reflects preoedipal stages and a dysregulation of affects resulting from the dis-integration of the right brain, the biological substrate of the human unconscious.
Basic research on the human brain suggests that “While the left hemisphere mediates most linguistic behaviors, the right hemisphere is important for broader aspects of communication” (van Lancker & Cummings, 1999, p. 95). Incorporating these data into regulation theory’s model of the psychotherapeutic process I have delineated the central role of implicit right brain-to-right brain nonverbal communications (facial expression, prosody, gesture) in transference-countertransference affective transactions. Interdisciplinary data and updated clinical models lead me to conclude that the right hemisphere is dominant in treatment, and that psychotherapy is not the “talking cure” but the affect communicating and regulating cure (Schore, 2005a).

Studies in interpersonal neurobiology also reveal that “The left hemisphere is more involved in the foreground-analytic (conscious) processing of information, whereas the right hemisphere is more involved in the background-holistic (subconscious) processing of information” (Prodan et al., 2001, p. 211). Note the reversal of this hemisphericity in Jung’s (1931) description of the therapeutic relationship:

In the treatment there is an encounter between two irrational factors, that is to say, between two persons who are not fixed and determinable quantities but who bring with them, besides their more or less clearly defined fields of consciousness, an indefinitely extended sphere of non-consciousness.
Jung is referring to transference-countertransference communications, which involve not secondary process rational “analytic” factors, but primary process irrational “non-analytical” functions.

In “Psychology of the Transference” Jung (1946) conceptualized the unconscious-to-unconscious relationship between the therapist and patient by referring to alchemical images of the *Rosarium philosophorum*. In Figure 3, the image of the King and Queen, note the joining of their left hands (controlled by their right hemispheres). Jung writes,

> The left…is the side of the heart, from which comes not only love but all the evil thoughts connected with it, the moral contradictions in human nature that are expressed most clearly in our affective life. The contact of left hands could therefore be taken as an indication of the affective nature of the relationship (my italics).
With direct relevance to transference-countertransference communications Howard & Reggia assert, “The right hemisphere develops a specialization for cognitive functions of a more ancient origin and the left for a specialization for functions of more modern origin” (2007, p. 121). This characterization echoes Freud’s (1933) speculation that transference is an “original, archaic method of communication between individuals.”

Freud (1925-1926/1961) proposed that transference “is a universal phenomenon of the human mind...and in fact dominates the whole of the each person’s relations to his human environment” (p. 42). Neuropsychoanalytic models of transference (Pincus, Freeman, & Modell, 2007) now contend that “no appreciation of transference can do without emotion” (p. 634), and that “transference is distinctive in that it depends on early patterns of emotional attachment with caregivers” (p. 636). These authors suggest that Freud “was referring to an ongoing process by which we situate ourselves in our perceived present, an entirely unconscious process influenced by our developmental histories with ourselves and others, a mixing and transforming of the current context” (p. 630). In a neuropsychological description that echoes psychoanalytic conceptions of transference Shuren and Grafman observe,

The right hemisphere holds representations of the emotional states associated with events experienced by the individual. When that
individual encounters a familiar scenario, representations of past emotional experiences are retrieved by the right hemisphere and are incorporated into the reasoning process. (2002, p. 918)

An essential tenet of Freud’s developmental model proscribed that the primary process system emerges in human infancy, before the secondary process system. It is important to point out Freud’s also postulated that primary process cognition is frequently accompanied by affect. Following this lead ego psychologists (Rapaport, 1951; Holt, 1967) also explored the primary process affective dimension. In more recent psychological studies, Russ (2000-2001) concludes, “primary-process is a subtype of affect in cognition that consists of content around which the child had experienced early intense feeling states…current primary-process expressions could reflect these early encodings of fused affect and cognition” (p. 31). In line with current developmental and relational models I argue that right brain-to-right brain communications represent interactions of the patient’s unconscious primary process system and the therapist’s primary process system (Schore, 1994). Congruent with the well established clinical relationship between early forming primary process and the development of object relations and the interpersonal world, I suggest that primary process cognition is the major communicative mechanism of the relational unconscious.

In a significant advance in our understanding of the dynamic processes of the relational unconscious, Dorpat (2001) describes the process of “primary process communication.” Congruent with the current clinical emphasis on the
central role of unconscious mechanisms in the therapy change process, he contends that it is critical for the therapist “to suspend attention to secondary process cognition while attending to the patient’s and the therapist’s own primary process derivatives” (p. 461). In line with the different processing capacities of the right and left brains, he conceptualizes primary and secondary process as parallel and relatively independent systems for the reception, analysis, processing, storing, and communication of information, and that in different contexts one or the other may predominate. In a striking similarity to attachment communications Dorpat states that “the primary process system is immediately and directly involved with perception...[it] analyzes, regulates, and communicates an individual’s relations with the environment,” (p. 449) and that this “nonverbal communication includes both body movements (kinesics), posture, gesture, facial expression, voice inflection, and the sequence, rhythm, and pitch of the spoken words (p. 451).”

Importantly, Dorpat notes that primary process “is a prereflective mode that does not immediately rise into awareness. We give meaning to all interactions without necessarily reflecting upon them or even clarifying them to ourselves” (p. 448). A common misconception of current cognitive secondary process (insight) psychotherapy models is that meaning is only created through awareness and verbal mentation. This prereflective mode, operating rapidly and beneath conscious awareness and equated with Fonagy et al.’s (2002) “mentalization” is the output of the right and not left hemisphere (Ohnishi et al., 2004).
Indeed in direct relevance to the psychotherapy process, neuroscience authors contend that “The right hemisphere operates in a more free-associative, primary process manner, typically observed in states such as dreaming or reverie” (Grabner et al., 2007, p. 228). Thus various disciplines are supporting earlier speculations of developmental psychologists of a direct link between the "puzzles of 'unconscious' and 'primary process' influences on later behavior" (Pipp & Harmon, 1987, p. 650). Split brain neurobiological studies by Galin (1974) and Hoppe (1977) established that the right hemisphere generates primary process while the left secondary process cognition. Pioneering psychological studies of these two processing modes by Martindale and & Hasenfus (1978) specifically indicated that logical, analytical secondary process cognition accompanies medium levels of cortical arousal, while primary process accompanies either high or low levels of cortical arousal (see Figure 4).
Right Brain Processes in Psychotherapy: Enactments, Autonomic Arousal Dysregulation, and Dissociation

With an eye to the therapy process Dorpat asserts, “In normal awake adults, these two modes are integrated...although one or the other may predominate...The derivatives of the primary process system includes affects,
imagery, metaphors, and nonverbal communication” (2001, p. 449). Right brain
primary process-to-right brain primary process transference-countertransference
communications especially predominate in clinical enactments. In a major
contribution integrating clinical models and neurobiological data, Ginot (2007, p. 317) convincingly argues, “Increasingly, enactments are understood as powerful manifestations of the intersubjective process and as inevitable expressions of complex, though largely unconscious self-states and relational patterns” (my italics).

In line with earlier neuropsychoanalytic speculations (Schore, 1997) and in support of the central thesis of this chapter Ginot observes,

This focus on enactments as communicators of affective building blocks also reflects a growing realization that explicit content, verbal interpretations, and the mere act of uncovering memories are insufficient venues for curative shifts...As intense manifestations of transference-countertransference entanglements, enactments seem to generate interpersonal as well as internal processes eventually capable of promoting integration and growth (2007, p. 317-318).

She concludes that these “unconscious affective interactions” “bring to life and consequently alter implicit memories and attachment styles.” Recall the hypothesis of Stern et al. (1998) that “implicit relational knowledge” stored in nonverbal domain is at the core of therapeutic change.

In previous neuropsychoanalytic work (Schore, 1999) I offered interdisciplinary evidence which shows that the right hemisphere is the locus of implicit memory. In discussing the role of the right hemisphere as “the seat of
implicit memory” Mancia notes, “The discovery of the implicit memory has extended the concept of the unconscious and supports the hypothesis that this is where the emotional and affective - sometimes traumatic - presymbolic and preverbal experiences of the primary mother-infant relations are stored.” (2006, p. 83). I further suggest that these implicit memories are encoded in high (hyperarousal) and low (hypoarousal) arousal states, marked by respectively bodily state-dependent memories of dysregulated sympathetic dominant energy-expending extreme increases of autonomic arousal (heart rate acceleration) as well as parasympathetic dominant energy-conserving extreme decreases of arousal (heart rate deceleration). The principle of state-dependent recall of implicit memories thus applies to each of these two domains: achieving a particular bodily state is necessary to access certain affects, behaviors and cognitions.

It is often overlooked that affects reflect an individual’s internal state and have an hedonic (valenced) dimension and an arousal (intensity) dimension. In states of right hemispheric hyperarousal that generate a massive density of intense sympathetic dominant, energy-expending, high arousal negative affect, arousal levels are so extremely elevated that they interfere with the individual’s capacity to adaptively engage with the social (object relational, intersubjective) environment. Bromberg (2006) links trauma, at any point in the life span, to autonomic hyperarousal, “a chaotic and terrifying flooding of affect that can threaten to overwhelm sanity and imperil psychological survival” (p. 33).
In contrast, states of right hemispheric parasympathetic dominant, energy-conserving hypoarousal generate a massive density of intense low arousal negative affect. In these latter affective states arousal levels are so extremely reduced that they interfere with individual’s capacity to adaptively disengage from the social environment. Thus, early relational trauma, reactivated in transference-countertransference enactments, manifests in dysregulated autonomic hyperarousal associated with sympathetic-dominant affects (panic-terror, rage and pain), as well as dysregulated autonomic hypoarousal and parasympathetic-dominant affects (shame, disgust, and hopeless despair).

Visualizing this conception, in the following figure the central zone reflects operations of both the left and right hemispheres in states of moderate arousal. Left hemispheric secondary process is dominant in states of neutral affect and autonomic balance. This middle band of neutral affect is bounded by (1) an upper band of right brain sympathetic dominant energy-expending high arousal affects associated with tight engagement with the environment and (2) a lower band of right brain parasympathetic dominant energy-conserving low arousal affects and disengagement from the external environment (Recordati, 2003).
In terms of Porges (1997) polyvagal model (Figure 6), the sympathetic hyperarousal zone processes states of danger (fight/flight), while the dorsal vagal hypoarousal system is dominant in states of life survival-threat (see Schore, in press). Recall the early development of these two stress-responsive psychobiological domains is directly impacted by dysregulated (abuse and neglect) attachment experiences. These right brain imprinted implicit memories
of the hyperarousal and dissociative-hypoarousal responses to early relational trauma are re-activated in the transference-countertransference.

Figure 6. Porges polyvagal model

Kalsched (2003) articulates the accepted clinical principle:

For our early trauma patients to get well again, they will have to suffer through a re-traumatization in their transferences. This repetition in the transference will be the person’s way of remembering, and may actually lead to the potential of healing of
trauma, provided that the therapist and patient can survive the *furor therapeudicus* that such transformation requires.

Such work implies a profound commitment by both therapeutic participants and a deep emotional involvement on the therapist’s part (Tutte, 2004). In these enactments the therapist’s affect tolerance is a critical factor determining the range, types, and intensities of emotions that are explored or disavowed in the transference-countertransference relationship and the therapeutic alliance (Schore, 2003b).

A general principle of this work is that the sensitive empathic therapist allows the patient to re-experience dysregulating affects in *affectively tolerable doses in the context of a safe environment, so that overwhelming traumatic feelings can be regulated and integrated into the patient’s emotional life*. In agreement with Ogden et al. (2005), Bromberg (2006) also points out that the therapeutic relationship must “feel safe but not perfectly safe. If it were even possible for the relationship to be perfectly safe, which it is not, there would be no potential for safe surprises…” (p. 95). This affect-focused work occurs at *the edges of the regulatory boundaries of affect tolerance* (Figure 7), or what Lyons-Ruth describes as the “fault lines” of self-experience where “interactive negotiations have failed, goals remain aborted, negative affects are unresolved, and conflict is experienced” (2005, p. 21).
In the above figure note the term “windows of affect tolerance.” This differs from the usual concept of “window of tolerance” which describes the range of optimal level of arousal to sustain secondary process cognition (conscious, verbal, explicit) and striatal motor activities (voluntary action; controlled overt behavior). These “cognitive and behavioral” functions are dependent upon a moderate rather than high or low arousal range, represented by a classical “inverted U.” This window of optimal verbal processing and overt behavioral expression thus reflects arousal levels optimal for left hemispheric
functions. Current cognitive-behavioral insight-driven clinical models operate in this arousal range and focus on these left hemispheric functions.

On the other hand the right brain has a different range of arousal tolerance to sustain its unique nonconscious psychobiological functions, and can operate at very high or very low arousal levels. The “windows of affect tolerance” thus refers to an optimal range of arousal for different affects and motivational states, which vary in arousal intensity. This affect tolerance is severely restricted in the emotional deadening defense of pathological dissociation. An expansion of both negative and positive affect tolerance is a goal of the affectively focused psychotherapy described in this chapter.

In such work, at some point the threatening dissociated affect must be activated, but in trace form, and regulated sufficiently so as not to trigger new avoidance. “The questions of how much and when to activate or to permit this activation, so as to repair the dissociation rather than reinforce it, must be addressed specifically for each patient.” (Bucci, 2002, p. 787). According to Bromberg (2005), “Clinically, the phenomenon of dissociation as a defense against self-destabilization…has its greatest relevance during enactments, a mode of clinical engagement that requires a [therapist’s] closest attunement to the unacknowledged affective shifts in his own and the patient’s self-states” (p. 5). This self-destabilization of the emotional right brain in clinical enactments can take one of two forms: high arousal explosive fragmentation vs. low arousal implosion of the implicit self (see Figure 8).
Figure 8. Psychobiology of high and low arousal enactments

Right Brain Processes in Psychotherapy: Co-Construction of Intersubjective Fields

In the last figure, visualize 2 planes of one window of affect tolerance in parallel to another: one represents the patient’s window of affect tolerance, the other the therapist’s. At the edges of the windows, the regulatory boundaries, the psychobiologically attuned empathic therapist, on a moment-to-moment basis, implicitly tracks and matches the patterns of rhythmic crescendos /
decrescendos of the patient’s regulated and dysregulated ANS with her own ANS crescendos / decrescendos. When the patterns of synchronized rhythms (represented as dynamic changes within the green segments) are in interpersonal resonance this right brain-to-right brain “specifically fitted interaction” generates amplified energetic processes of arousal, and this interactive affect regulation in turn co-creates an intersubjective field.

The dynamic intersubjective field is described by Stern (2005) as “the domain of feelings, thoughts, and knowledge that two (or more) people share about the nature of their current relationship…This field can be reshaped. It can be entered or exited, enlarged or diminished, made clearer or less clear” (my italics). In my work on the interpersonal neurobiology of intersubjectivity I have asserted that the right hemisphere is dominant for “subjective emotional experiences,” and that the interactive “transfer of affect” between the right brains of the members of therapeutic dyad is therefore best described as “intersubjectivity” (Schore, 1999). An intersubjective field is more than just an interaction of two minds, but also two bodies, which, when in affective resonance elicit an amplification of both CNS and ANS arousal (see chapter 3 of Schore 2003b on the communication of affects in an intersubjective field via projective identification).

At present there is an intense interest in incorporating the body into psychotherapeutic treatment. The solution to this problem is to integrate into clinical models information about the autonomic nervous system, “the physiological bottom of the mind” (Jackson, 1931). This system generates vitality affects and controls the cardiovascular system, effectors on the skin, and visceral
organs. Stress-induced alterations in these dynamic psychobiological parameters mediate the therapist’s somatic countertransference to the patient’s nonverbal communications within a co-constructed intersubjective field. In previous writings on the psychophysiology of countertransference I stated:

Countertransferential processes are currently understood to be manifest in the capacity to recognize and utilize the sensory (visual, auditory, tactile, kinesthetic, and olfactory) and affective qualities of imagery which the patient generates in the psychotherapist (Suler, 1989). Similarly, Loewald (1986) points out that countertransference dynamics are appraised by the therapist’s observations of his own visceral reactions to the patient's material. (Schore, 1994, p. 451)

Recall the ANS contains dissociable sympathetic energy expending and parasympathetic components. Extending this intraorganismic concept to the interpersonal domain, two dissociable intersubjective fields may be co-created: (1). A sympathetic dominant high energy intersubjective field processes state-dependent implicit memories of object relational-attachment transactions in high arousal states. (Table 1), and (2). A parasympathetic dominant low energy intersubjective field processes state-dependent implicit memories of object relational-attachment transactions in low arousal states. (Table 2)

<table>
<thead>
<tr>
<th>Table 1. High energy charge intersubjective field</th>
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<td>Hyperarousal = hypermetabolic CNS-ANS limbic-autonomic circuits = stressful sympathetic dominant, energy-expending psychobiological states.</td>
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Hi energy explosive dyadic enactments; fragmenting implicit self.
Sympathetic dominant intersubjectivity; over-engagement with social environment.
Somatic countertransference to communicated high arousal affects expressed in heart rate acceleration. Focus on exteroceptive sensory information.
Regulation / dysregulation of hyperaroused affective states (aggression-rage, panic-terror, sexual arousal, excitement-joy).

Table 2. Low energy charge intersubjective field

Low arousal = hypometabolic CNS-ANS circuits = stressful parasympathetic dominant energy-conserving psychobiological states.
Low energy implosive dyadic enactments; collapsing implicit self.
Parasympathetic-dominant intersubjectivity; dissociation/disengagement from social environment.
Somatic countertransference to communicated low arousal affects expressed in heart rate deceleration. Focus on interoceptive information.
Regulation / dysregulation of hyporoused affective states (shame, disgust, hopeless despair).

Note the contrast of somatic transference-countertransferences in the dual intersubjective fields. Also, the form of primary process expressions in affect,
cognition, and behavior differ in ultra-high and low arousal altered states of consciousness. Thus high and low arousal states associated with respectively terror and shame will show qualitatively distinct patterns of primary process nonverbal communication of “body movements (kinesics), posture, gesture, facial expression, voice inflection, and the sequence, rhythm, and pitch of the spoken words” (Dorpat, 2001, p. 451). Recall that sympathetic nervous system activity is manifest in tight engagement with the external environment and high level of energy mobilization and utilization, while the parasympathetic component drives disengagement from the external environment and utilizes low levels of internal energy (Recordati, 2003). This principle applies to not only overt interpersonal behavior but also to covert intersubjective engagement-disengagement with the social environment, the coupling and de-coupling of mind-bodies and internal worlds.

Recent models of the ANS indicate that although reciprocal activation usually occurs between the sympathetic and parasympathetic systems, they are also able to uncouple and act unilaterally (Schore, 1994). Thus the sympathetic hyperarousal and parasympathetic hypoarousal zones represent two discrete intersubjective fields of psychobiological attunement, rupture, and interactive repair of what Bromberg (2006) terms “collisions of subjectivities.” (Figure 9).
It should be noted that just as emotion researchers have over-emphasized sympathetic dominant affects and motivations (fear, flight-fight), so have psychotherapists overly focused on the reduction of anxiety-fear or aggression-rage states. One outstanding example of this continuing bias is the devaluation of the critical role of dysregulated parasympathetic shame and disgust states in all clinical models. Similarly, psychodynamic models have highlighted the roles of rage and fear-terror in high arousal enactments, and subsequent explosive fragmentation of the high energy intersubjective field and the implicit self. As a
result there has been an under emphasis on the low energy parasympathetic dominant intersubjective field. This is problematic, because clinical work with parasympathetic dissociation, “detachment from an unbearable situation,” is always associated with parasympathetic shame dynamics.

In my very first work I proposed that the parasympathetic low arousal state of shame, subjectively experienced as a "spiraling downward" represents a sudden shift from sympathetic hyperarousal into parasympathetic dorsal vagal hypoarousal (Schore, 1991). Recall, the collapse of the implicit self is subtle, signaled by amplification of the parasympathetic affects of shame and disgust, and by the cognitions of hopelessness and helplessness, common accompaniments of traumatic experiences. Working deep in the low arousal intersubjective field Bromberg (2006) observes that shame is present in those patients who ‘disappear’ when what is being discussed touches upon unprocessed early trauma, and that shame is the most powerful affect a person is unable to modulate. He concludes,

The task that is most important, and simultaneously most difficult for the analyst, is to watch for signs of dissociated shame both in himself and in his patient - shame that is being evoked by the therapeutic process itself in ways that the analyst would just a soon not have to face...The reason that seemingly repeated enactments are struggled with over and over again in the therapy is that the analyst is over and over pulled into the same enactment to the degree he is not attending to the arousal of shame. (2006, p. 80)
Perhaps the most pointed observation is made by Nathanson:

The entire system of psychotherapy, as we had been taught it, worked only if we overlooked the shame that we produced day in and day out in our therapeutic work...It became clear that post-Freudian society had been treated for almost everything but shame, and that the degree and severity of undiagnosed and untreated shame problems far exceeded anything we had ever imagined. (1996, p. 3)

Clinicians and researchers need to pay more attention to the energy-conserving parasympathetic-dominant intersubjective field of psychobiological attunement, rupture, and repair.

**Right Brain Processes in Psychotherapy: Interactive Affect Regulation as a Central Mechanism of the Change Process**

Various authors have described the subtle psychological activities of the sensitive clinician who scaffolds the co-creation of an intersubjective field with the patient. Bromberg observes,

> When [a therapist] gives up his attempts to ‘understand’ his patient and allows himself to know his patient through the ongoing intersubjective field they are sharing at that moment, an act of recognition (not understanding) takes place in which words and thoughts come to symbolize experience instead of substitute for it. (p. 2006, 11)
The dyadic nature of this deep affective exploration of the self was noted by Jung’s (1946) suggestion that the clinician must go to the limit of his subjective possibilities, otherwise the patient will be unable to follow suit. According to Lichtenberg (2001), staying with the patient’s immediate communication longer and more intensely usually gains more understanding than is achieved either by a defense focus or a genetic focus on what isn’t said. And Whitehead describes the affect amplifying effects encountered in the deep strata of the unconscious:

Every time we make therapeutic contact with our patients we are engaging profound processes that tap into essential life forces in our selves and in those we work with...*Emotions are deepened in intensity and sustained in time when they are intersubjectively shared.* This occurs at moments of *deep contact.* (2005, p. 624, my italics)

As previously discussed, a central tenet of regulation theory dictates that the interpersonal resonance within an intersubjective field triggers an amplification of state. The resultant co-created increased arousal (metabolic energy) allows for hypoaroused dissociated unconscious affects to be intensified. This bottom-up interactive regulation enables affect beneath conscious awareness to be intensified and sensed in both. Thus the “potential beginning” of an unconscious affect (Freud, 1915) is intersubjectively energized into emergence.

As in all attachment dynamics, a dyadic amplification of arousal-affect *intensity* generated in a resonant transference–countertransference context facilitates the intensification of the felt sense in both therapist and patient. This same interpersonal psychobiological mechanism *sustains* the affect in time, that
is, the affect is “held” within the intersubjective field long enough for it to reach conscious awareness in both members of a psychobiologically attuned therapeutic dyad. It should be noted that this affect charging-amplifying process includes an intensification of both negative and/or positive affect in an intersubjective field.

But more than empathic affect attunement and deep contact is necessary for further therapeutic progression: at the psychobiological core of the intersubjective field is the attachment bond of emotional communication and affect regulation. The clinician’s psychobiological interactive regulation / repair of dysregulated especially unconscious (dissociated) bodily-based affective states is an essential therapeutic mechanism. Recall Bucci’s (2002) proscription that the threatening dissociated affect must be sufficiently regulated. Sands notes that

[D]issociative defenses serve to regulate relatedness to others...The dissociative patient is attempting to stay enough in a relationship with the human environment to survive the present while, at the same time, keeping the needs for more intimate relatedness sequestered but alive. (1994, p. 149)

Due to early learning experiences of severe attachment failures, the patient accesses pathological dissociation in order to anticipate potential dysregulation of affect by anticipating trauma before it arrives. In characterological dissociation an autoregulatory strategy of involuntary disengagement is initiated and maintained to prevent potentially dysregulating intersubjective contact with others. But as the patient continues through the
change process, she becomes more able to forgo autoregulation for interactive regulation when under interpersonal stress. In this work, “it is not the past we seek but the logic of the patient’s own state regulating strategies” (in Schwaber, 1990, p. 238).

Ogden and her colleagues conclude,

Interactive psychobiological regulation (Schore, 1994) provides the relational context under which the client can safely contact, describe and eventually regulate inner experience...Rather than insight alone, it is the patient’s experience of empowering action in the context of safety provided by a background of the empathic clinician’s psychobiologically attuned interactive affect regulation that helps effect...change. (2005, p. 22)

This interactive affect regulation occurs at the edge of the regulatory boundaries of both high and low arousal intersubjective fields.

In this work Bromberg warns, “An interpretative stance...not only is thereby useless during an enactment, but also escalates the enactment and rigidifies the dissociation” (2006, p. 8). A therapeutic focus on regulating not only conscious but unconscious (dissociated) affect highlights the conclusion that implicit nonverbal affective more than the explicit verbal cognitive (insight) factors lie at the core of the change process in the treatment of more severely disturbed patients. At the most fundamental level, the intersubjective work of psychotherapy is not defined by what the therapist does for the patient, or says
to the patient (left brain focus). Rather, the key mechanism is *how to be with the patient*, especially during affectively stressful moments (right brain focus).

Note the similarity of working at the right brain regulatory boundaries in the heightened affective moment of enactments to Lichtenberg’s “disciplined spontaneous engagements” that occur within “an ambience of safety:”

Spontaneous refers to the [therapist’s] often unexpected comments, gestures, facial expressions, and actions that occur as a result of an unsuppressed emotional upsurge. These communications seem more to pop out than to have been planned or edited. The [therapist] may be as surprised as the patient. By engagement, we refer to communications and disclosures that are more enactments than thought-out responses. (2001, p. 445)

Tronick’s “moments of meeting,” a novel form of engagement of the therapeutic dyad, also occur at the regulatory boundaries: “The [therapist] must respond with something that is experienced as specific to the relationship with the patient and that is expressive of her own experience and personhood, and carries her signature...It is dealing with ‘what is happening here and now between us.’ The strongest emphasis is on the *now* because of the affective immediacy...It requires spontaneous responses and ...need never be verbally explicated, but can be, after the fact.” (2007, p. 436).

According to Greenberg & Pavio (1997) reliving the traumatic experience in therapy within the safety and security of an empathic, supportive therapist
provides the person with a new experience. This new experience is specifically the clinician’s interactive regulation of the patient’s dysregulated right brain hyperaroused and hypoaroused affective states. In support of this model current experimental researchers report “as suggested in clinical practice, it is necessary to ‘revisit’ an emotionally distressing memory before it can be controlled,” and demonstrate that prefrontal areas that inhibit emotional memories and suppress emotional reactivity are lateralized predominantly to the right hemisphere (Depue, Curran, & Banich, 2007, p. 218).

In addition to scaffolding the co-generation a wider variety of more intense and enduring affects in the intersubjective field, the clinician also facilitates “the processing to be safer and safer so that the person’s tolerance for potential flooding of affect goes up” (Bromberg, 2006, p. 79). Resultingly, the patient’s threshold for ‘triggering’ increase, allowing her increasingly to hold on to the ongoing relational experience (the full complexity of the here and now with the therapist) as it is happening, with less and less need to dissociate; as the processing of the here and now becomes more and more immediate, it becomes more and more experientially connectable to her past. (p.69)

Effective work at the regulatory boundaries of right brain low and high arousal states ultimately broadens the windows of affect tolerance (see Figure 10).

LeDoux offers an elegant description of this advance of emotional development:
Because emotion systems coordinate learning, the broader the range of emotions that [an individual] experiences the broader will be the emotional range of the self that develops...And because more brain systems are typically active during emotional than during nonemotional states, and the intensity of arousal is greater, the opportunity for coordinated learning across brain systems is greater during emotional states. By coordinating parallel plasticity throughout the brain, emotional states promote the development and unification of the self (2002, p. 322).

Growth-facilitating experiences of at the regulatory boundaries thus promote the “affective building blocks of enactments” (Ginot, 2007). The patient’s increased ability to consciously experience and communicate a wider range of positive and negative affects is due to a developmental advance in the capacity to regulate affect. This further maturation of adaptive self-regulation is in turn reflected in the appearance of more complex emotions that result from the simultaneous blending of different affects, and in an expansion in the “affect array.”
Effective psychotherapy of attachment pathologies and severe personality disorders must focus on unconscious affect and the survival defense of pathological dissociation, “a structured separation of mental processes (e.g., thoughts, emotions, conation, memory, and identity) that are ordinarily integrated” (Spiegel & Cardeña, 1991, p. 367). Overwhelming traumatic feelings that are not regulated can not be adaptively integrated into the patient’s emotional life. This dissociative deficit specifically results from a lack of integration of the right hemisphere, the emotional brain. But long-term therapy
can positively alter the developmental trajectory of the deep right brain and facilitate the integration between cortical and subcortical right brain systems. This enhanced interconnectivity allows for an increased complexity of defenses of the emotional right brain, coping strategies for regulating stressful affect that are more flexible and adaptive than pathological dissociation. This in turn enhances the further maturation of the right hemisphere core of the self and its central involvement in “patterns of affect regulation that integrate a sense of self across state transitions, thereby allowing for a continuity of inner experience” (Schore, 1994, p. 33).

The increased resilience of unconscious strategies of stress regulation that results from an optimal psychotherapeutic experience represents an experience-dependent maturation of “the right hemispheric specialization in regulating stress - and emotion-related processes” (Sullivan & Dufresne, 2006). Efficient functions of the right brain implicit self are essential for the reception, expression, and communication of socioaffective information, the unconscious regulation of physiological, endocrinological, neuroendocrine, cardiovascular, and immune functions, subjectivity / intersubjectivity, trust, affective theory of mind, and empathy. Hartikainen et al. summarize the critical role of nonconscious emotion processing for human survival:

In unpredictable environments, emotions provide rapid modulation of behavior. From an evolutionary perspective, emotions provide a modulatory control system that facilitates survival and reproduction. Reflex-like reactions to emotional events can occur before attention is
paid to them…Neuropsychological evidence supports a right hemispheric bias for emotional and attentional processing in humans. (2007, p. 1929).

At the outset of this chapter I asserted that the emerging paradigm shift is highlighting the primacy of affect in human development, psychopathogenesis, and treatment. A large body of research in the neuroscience literature suggests a special role of the right hemisphere in empathy, identification with others, intersubjective processes (Decety & Chaminade, 2003), autobiographical memories, own body perception, self-awareness, self-related cognition (Uddin et al., 2006), as well as self-images that are not consciously perceived (Theoret et al., 2004), all essential components of the therapeutic process.

A fundamental theme of this work is that bodily-based right brain affect, including specifically unconscious affect needs to be addressed in updated psychotherapeutic interventions. Studies confirm that unconscious processing of emotional stimuli is specifically associated with activation of the right and not left hemisphere: “The left side is involved with conscious response and the right with the unconscious mind” (Mlot, 1998, p. 1006). Due to it’s unique neuroanatomical and neurobiological properties (see Figure 5),

[T]he more ‘diffuse’ organization of the right hemisphere has the effect that it responds to any stimulus, even speech stimuli, more quickly and, thus earlier. The left hemisphere is activated after this and performs the slower semantic analysis and synthesis…the arrival of an individual signal initially in the right hemisphere and then in
the left is more ‘physiological.’ (Buklina, 2005, p. 479)

Even more than the patient’s late-acting rational, analytical and verbal left mind, the growth-facilitating psychotherapeutic relationship needs to directly access the regulatory boundaries and deeper psychobiological strata of both the patient’s and the clinician’s right minds. Alvarez asserts, “Schore points out that at the more severe levels of psychopathology, it is not a question of making the unconscious conscious: rather it is a question of restructuring the unconscious itself” (2006, p. 171).

Earlier I suggested that the right hemisphere is dominant in the change process of psychotherapy. Neuroscience authors now conclude that although the left hemisphere is specialized for coping with predictable representations and strategies, the right predominates for coping with and assimilating novel situations (Podell et al., 2001) and ensures the formation of a new program of interaction with a new environment (Ezhov & Krivoschchekov, 2004). Indeed,

The right brain possesses special capabilities for processing novel stimuli...Right-brain problem solving generates a matrix of alternative solutions, as contrasted with the left brain’s single solution of best fit. This answer matrix remains active while alternative solutions are explored, a method suitable for the open-ended possibilities inherent in a novel situation. (Schutz, 2005, p. 13)

The functions of the emotional right brain are essential to the self-exploration process of psychotherapy, especially of unconscious affects that can be integrated into a more complex implicit sense of self. Both optimal development and
effective psychotherapy promote more than cognitive changes of the conscious mind, but an expansion of the right brain implicit self, the biological substrate of the human unconscious.

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