Paradigm Shift: The Right Brain and the Relational Unconscious

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At the Division 39 Spring 2008 Meeting, Dr. Schore received The Division of Psychoanalysis Scientific Award, "In Recognition of Outstanding Contributions to Research, Theory and Practice of Neuroscience and Psychoanalysis." In accepting the award, he presented an address. The following is an abbreviated version of the Award Address. The editor.

It is my great pleasure to accept this award, especially because it recognizes my work in both neuroscience and psychoanalysis. Amongst others, I'd like to thank Bill MacGillivray for allowing me to present my ideas on neuropsychoanalysis and regulation theory in an ongoing column in *Psychologist–Psychoanalyst*. On this occasion I'd like to take the opportunity to share my views on the current state of the field, especially looking at its increasing connections with the disciplines that border psychoanalysis. As you are well aware, the term paradigm shift is now appearing across a number of clinical and applied sciences, and the term "interdisciplinary" is highly valued in all fields.

After a century of disconnection, psychoanalysis is returning to its biological and psychological sources, and this re-integration is generating a palpable surge of energy and revitalization within the field. Psychoanalysis originated at end of 19th century in Freud's (1966/1895) "Project for a Scientific Psychology," the goal of which was to "furnish a psychology that shall be a natural science." In the middle of the last decade, one hundred years after Freud's initial attempt to integrate mind and brain I asserted, "At this moment, right at the midpoint of what is being described as 'The Decade of the Brain,' is a rapprochement between psychoanalysis and neurobiology now at hand? Right off, let me state straight out that to my mind, the time is right" (Schore, 1997).

At the core of psychoanalysis is the concept of the unconscious. The field's unique contribution to science has been its explorations of the psychic structures that operate beneath conscious awareness in order to generate essential survival functions. In the last 10 years other sciences have become extremely interested in these nonconscious "implicit" phenomena. Writing to the broader field of psychology, Bargh and Morsella (2008) now conclude, "Freud's model of the unconscious as the primary guiding influence over every day life, even today, is more specific and detailed than any to be found in contemporary cognitive or social psychology." A perusal of journals within and without psychoanalysis clearly reveals that a bidirectional dialogue currently exists between psychoanalytic studies of the unconscious processes of the mind and neuroscience's studies of the nonconscious processes of the brain.

In his early attempts to chart the unique landscape of the inner world Freud (1963/1920) described the unconscious as "a special realm, with its own desires and modes of expression and peculiar mental mechanisms not elsewhere operative." Following his dictum that "the unconscious is the infantile mental life," and that in early ontogeny the unconscious matures before the conscious, in my first book I offered interdisciplinary evidence which indicated that the early maturing right brain represents the developing Freudian unconscious, the system that supports "the major sources of the primary forces that drive human emotion, cognition, and behavior" (Schore, 1994). In ongoing work I continue to provide both experimental and clinical evidence that the right hemisphere "implicit self" represents the biological substrate of the human unconscious.

This model is confirmed across a number of disciplines. Neuroscience authors are concluding, "The right hemisphere has been linked to implicit information processing, as opposed to the more explicit and more conscious processing tied to the left hemisphere" (Happaney et al., 2004). Current psychophysiological workers are reporting, "We found that the left hemisphere more than the right can mediate conscious elaboration…This result is in line with previous research, that underlined a left-conscious/right-unconscious dichotomy" (Balconi & Lucchiari, 2008).

In these ongoing studies the unique contribution of contemporary psychoanalysis is, of course, the concept of a relational unconscious. Summarizing this work I have proposed that the right brain implicit self acts as "a cohesive, active mental structure that continuously appraises life's experiences and responds according to its scheme of interpretation," and that "In contrast to a static, deeply buried storehouse of ancient memories buried and silenced in 'infantile amnesia,' contemporary intersubjective psychoanalysis now refers to a 'relational unconscious,' whereby one unconscious mind communicates with another unconscious mind" (Schore, 2003).

But even more, and perhaps unexpectedly, recent clinical and experimental studies are highlighting the essential evolutionary role of a bodily-based affective unconscious, not only in infancy but over the later stages of the life span. Studies clearly show that the unconscious

processing of emotional stimuli is specifically associated with activation of the right and not left hemisphere. Current neuropsychiatric research indicates "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). As psychoanalysis has moved from a zeitgeist of a behavioral psychology to a cognitive psychology, we now are entering into a period that emphasizes "the primacy of affect."

I suggest that the ongoing paradigm shift across all sciences is from conscious, explicit, analytical, verbal, and rational left brain to unconscious, integrative, nonverbal, bodily-based emotional processes of the right brain. Tracking this paradigm shift, in three volumes and numerous articles I have suggested that nonconscious right brain affective processes lie at the core of the "implicit–emotional–corporeal self," the biological substrate of the human unconscious, and are central to a deeper understanding of the fundamental mechanisms that drive development, psychopathogenesis, and psychotherapy.

In a recent editorial in *Motivation and Emotion,* the editor Richard Ryan (2007) describes the primacy of affective processes in the human experience:

> After three decades of the dominance of cognitive approaches, motivational and emotional processes have roared back into the limelight …Thus, we are living in an epoch where motivation and emotion "matter," not only in an abstract theoretical sense, but also as they inform applied work in areas such as health care, psychotherapy, education, sports, religion, or other domains.

With respect to clinical psychoanalysis and psychotherapy in general, the paradigm shift is from conscious cognition to unconscious emotion.

Paradigm Shift: Interdisciplinary Interest in Right Brain Emotional Processes

Though long devalued by science, psychoanalysis, and indeed unconscious cultural forces, a massive amount of current experimental and clinical data supports the psychobiological organizing principle that emotional processes are essential to organism survival. Emotions involve rapid conscious appraisals of events that are important to individual, and represent reactions to fundamental relational meanings that have adaptive significance.

Both neuropsychoanalysis and affective neuroscience are focusing on the neurobiology of emotion. A large body of studies demonstrates the central role of the right hemisphere in not only the recognition and expression of intense emotions, but also in the nonverbal communication of emotional states. In the psychoanalytic literature Dorpat (2001) comments upon this unconscious communication: "In adults as well as children, emotions are the central medium through which vital information, especially information about interpersonal relations is transmitted and received." This right brain-to-right brain dialogue of ultra-rapid bodily-based affective communications in both mother–infant and patient–therapist attachment transactions occurs beneath levels of conscious awareness of both members of dyad (Schore, 1994).

In the neuropsychological literature, Schutz (2005) underscores the adaptive value of efficient right hemispheric processing of emotions:

> 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.

Furthermore, both clinicians and researchers are placing an emphasis on not just conscious, but "rapidly processed" and therefore unconscious emotion. Neurobiological studies confirm a right hemispheric dominance in the processing of unconscious negative emotion and self-images, especially self-images that are not consciously perceived (Sato & Aoki, 2006; Theoret et al., 2004). Drawing upon his extensive research on the basic science of implicit, affective processes, Lane (2008) concludes:

> Primary emotional responses have been preserved through phylogenesis because they are adaptive. They provide an immediate assessment of the extent to which goals or needs are being met in interaction with the environment, and they reset the organism behaviorally, physiologically, cognitively, and experientially to adjust to these changing circumstances.

In my 1994 book I speculated that emotional processes lie at the core of not only early developmental processes, but also in the re-evocation of these processes in the psychotherapeutic relationship. Psychoanalytic models of psychotherapy focus on the recognition and retrieval of early affect-laden memories. In this approach, affects, including unconscious affects, are both "the center of empathic communication" and the "primary data," and "the regulation of conscious and unconscious feelings is placed in the center of the clinical stage" (Schore, 1994).

It is now clear that a deeper understanding of affective processes is closely tied to the problem of the regulation of these processes. Affect regulation, a central mechanism of both development and the change process of psychotherapy, is usually defined as set of conscious control processes by which we influence, consciously and voluntarily, the conscious emotions we have, and how we experience and express them. In a groundbreaking article in the clinical psychology literature, Greenberg (2007) describes a "self-control" form of emotion regulation involving higher levels of cognitive executive function that allows individuals "to change the way they feel by consciously changing the way they think." This explicit form of affect regulation is performed by the verbal left hemisphere. Unconscious bodily-based emotion is usually not addressed in this model. Notice this mechanism is at the core of insight, exclusively used by not only by classical psychoanalysis but also cognitive behavioral therapy.

In contrast to this conscious emotion regulation system, Greenberg describes a second, more fundamental implicit affect regulatory process performed by the right hemisphere. This system rapidly and automatically processes facial expression, vocal quality, and eye contact in a relational context. Therapy attempts not control but the "acceptance or facilitation of particular emotions," including "previously avoided emotion," in order to allow the patient to tolerate and transform them into "adaptive emotions." Citing my work (all of which focuses on right brain implicit affect regulation) he asserts, "it is the building of implicit or automatic emotion regulation capacities that is important for enduring change, especially for highly fragile personality-disordered clients."

I suggest that the early forming survival mechanism of right brain implicit affect regulation (rather than later forming left brain conscious emotional control) is at the center of the paradigm shift in clinical work, especially with the more severe psychopathologies whose etiologies lie in preoedipal stages of development.

Paradigm Shift: From Oedipal to Preoedipal Stages of Development

The essential problem of the early development of the unconscious mind, an area of intense interest to the early pioneers (e.g., Winnicott, Klein, Bowbly, Mahler) has been addressed by scientific methods in the ongoing work of Stern, Beebe, Tronick and others. Over the last 15 years my research in developmental neuropsychoanalysis integrates this work with the other developmental sciences. The stages of infancy of attachment and intersubjectivity exactly overlap a critical period of the experience–dependent maturation of the early developing right brain. In 1997 Chiron and her colleagues offered a developmental neurobiological study entitled "The right brain hemisphere is dominant in human infants." A just-published near-infrared spectroscopy study of infant-mother attachment concludes, "our results are in agreement with that of Schore (2000) who addressed the importance of the right hemisphere in the attachment system" (Minagawa-Kawai et al., 2008).

For the last 15 years I have elaborated regulation theory, a theoretical model of attachment. In emotionally charged attachment transactions of right brain nonverbal visual–facial, auditory–prosodic, and tactile–gestural communications, the psychobiologically attuned caregiver regulates the infant's arousal states (Schore, 2005a). Indeed developmental scientists now conclude that "A number of functions located within the right hemisphere work together to aid monitoring of a baby. As well as emotion and face processing the right hemisphere is also specialized in auditory perception, the perception of intonation, attention, and tactile information" (Bourne & Todd, 2004). Echoing this in the neuroscience literature, Rotenberg (2004) describes:

> The main functions of the right hemisphere [are]…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. Indeed, a converging consensus now indicates "Earlier maturation of the right hemisphere is supported by both anatomical and imaging evidence" (Howard & Reggia, 2007).

The synergistic effect of the integration of psychoanalysis and developmental affective neuroscience has been the generation of a significant amount of new information on the early development of object relational processes, intersubjectivity, and attachment in the first two years of life: "the preoedipal period." Current explorations of the early maturing right brain are essential to a deeper understanding of not only the unconscious, but emotional development, attachment, and psychopathogenesis in the critical stages of human infancy.

During this same period clinical psychoanalysis has become very interested in attachment. According to Chused (2000), "Attachment research can help us understand how psychotherapeutic intersubjective experience becomes transformed into intrapsychic structure." We now have a complex model of how early intersubjective, preverbal, bodily-based attachment experiences impact the development of right brain psychic structure. This knowledge provides us with a clinically relevant model of precisely how the object representational inner world of mother communicates and shapes the inner world of infant, a heuristic model of the early development of both the structure and function of the bodily-based unconscious (and preconscious) mind.

This theoretical advance is acting as a potent force in shifting the focus of models of personality development, psychopathogenesis and treatment towards the preoedipal period (nonverbal infant) and away from events in the oedipal period (verbal child 3-4 years). As opposed to classical psychoanalytic models that stressed sexuality and aggression as primary motivational factors, updated conceptions focus upon preoedipal object relations, attachment dynamics and affect dysregulation as primary forces that shape the unconscious systems at the core of a unique personality.

Paradigm Shift: Intrapsychic Unconscious Mind to Bodily-Based Relational Unconscious

Attachment research demonstrates that the primary caregiver regulates not just the infant's behavior or cognition, but fundamentally his bodily-based states of affective arousal. Recall Winnicott's description of a communication between the baby and the mother in terms of the anatomy and physiology of live bodies. In the developmental psychological literature on attachment Pipp and Harmon (1987) suggest that throughout the lifespan we are biologically connected to those with whom we have close relationships.

Much more than just a match of cognitions and the emergence of mentalization, the evolutionary mechanism of attachment facilitates the experience-dependent maturation of the right brain's capacity for the regulation of emotional states. It thus represents the regulation of biological synchronicity between/within organisms (not merely minds). Kohut's speculation that the infant's dyadic regulatory transactions with maternal selfobject allows for the maintenance of his homeostatic equilibrium is confirmed by neuroscience, where researchers observe that the dyadic interaction between the newborn and the mother serves as a regulator of the developing individual's internal homeostasis (2001). A major expression of the paradigm shift is the correction of Descartes' error. Current models that integrate psychology and biology thus emphasize changes that occur in both mind and body.

Paradigm Shift: Explicit to Implicit Realm

The fact that the right hemisphere is centrally involved in "implicit learning" is directly relevant to Stern's (1998) proposal that "implicit relational knowledge" stored in the nonverbal domain is at the core of therapeutic change. Knox (2003) concludes, "In essence, it is the concepts of implicit memory and the internal working model which provide the basis for a paradigm shift in relation to our understanding of the human psyche." Mancia (2006) describes the right hemisphere as "the seat of implicit memory." He 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." This conception is being incorporated into revised psychoanalytic models for working with early relational trauma.

The current shift into the implicit realm is echoed in an APA Presidential Task Force on Evidence-Based Practice (2006): "Central to clinical expertise is interpersonal skill, which is manifested in forming a therapeutic relationship, encoding and decoding verbal and nonverbal responses, creating realistic but positive expectations, and responding empathically to the patient's explicit and implicit experiences and concerns."

Paradigm Shift: Secondary Process Cognition to Primary Process Communication

In 1994 I suggested that nonverbal communication in both early development and the therapeutic alliance is the output of the right brain primary process communication system. Like myself, Panksepp (2008) refers to right brain primary process systems and the affective states they engender. Other neuroscientists contend, "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).

The relational trend in the field shifts primary process from intrapsychic cognition to intersubjective communication. In an important article on "primary process communication" Dorpat (2001) argues, "The primary and secondary process may be conceptualized as two parallel and relatively independent systems for the reception, analysis, processing, storing, and communication of information." He asserts that affective and object-relational information are transmitted predominantly by primary process communication, and that secondary process communication has a highly complex and powerful logical syntax but lacks adequate semantics in the field of relationships. Echoing a description of right brain attachment communications, he concludes such nonverbal communication contains "both body movements (kinesics), posture, gesture, facial expression, voice inflection, and the sequence, rhythm, and pitch of the spoken words." Integrating this and other research and clinical studies I have argued that therapy is not the "talking" but the "communicating cure" (Schore, 2005).

Paradigm Shift: Conscious Verbal to Unconscious Nonverbal Affective Communications

Current neuroscientists document that although the left hemisphere mediates most linguistic behaviors, the right hemisphere is important for the broader aspects of communication. Consonant with this principle, I contend that just as the left brain communicates its states to other left brains via conscious linguistic behaviors so the right nonverbally communicates its unconscious states to other right brains that are tuned to receive these communications. Studies show that 60% of human communication is nonverbal. In writing on therapeutic nonverbal implicit communication, Chused (2007) concludes, "I suspect our field has not yet fully appreciated the importance of… implicit communication." Stern (2005) further suggests:

> Without the nonverbal it would be hard to achieve the empathic, participatory, and resonating aspects of intersubjectivity. One would only be left with a kind of pared down, neutral 'understanding' of the other's subjective experience. One reason that this distinction is drawn is that in many cases the analyst is consciously aware of the content or speech while processing the nonverbal aspects out of awareness. With an intersubjectivist perspective, a more conscious processing by the analyst of the nonverbal is necessary.

These ideas are echoed by Hutterer and Liss (2006), who state that nonverbal variables such as tone, tempo, rhythm, timbre, prosody and amplitude of speech, as well as body language signals may need to be re-examined as essential aspects of therapeutic technique. Even verbal interventions should be couched in emotionally appropriate and empathic climates. Indeed, Modell (1993) points out that the clinician's empathic understanding of the patient is dependent upon the affective communications that accompany the patient's words." Andrade (2005) notes that the affective content of the analyst's voice—and not the semantic content—that has an impact on the patient's store of implicit memories. According to Geller (2003), "The creation of meaning through the symbolization of experience can occur in any medium or channel of communication. Words are only part of the communicative exchanges that take place during therapy sessions. So much of what is communicated in therapy is visual or nonverbal."

Paradigm Shift: Core of Psychotherapy Change Process Shifts from Insight to Affect Regulation

In the clinical psychology literature Greenberg (2007) outlines the therapeutic relevance of the clear distinction of left and right brain affect regulation: "An issue of major clinical significance then is generating theory and research to help understand to what extent automatic emotion processes can be changed through deliberate processes and to what extent only through more implicit processes based on new emotional and/or relational experiences." Stated in another way the question becomes how much emotional change requires implicit experiential learning versus explicit conceptual learning. In agreement with current trends in modern relational psychoanalysis he concludes, "The field has yet to play adequate attention to implicit and relational processes of regulation."

Converging with this, current experimental psychology authors studying affect and motivation are contending, "Both researchers and practitioners have come to appreciate the limits of exclusively cognitive approaches for understanding the initiation and regulation of human behavior… As we take interest in human performance, adaptation and wellness, issues of affect regulation and motivation are thus salient topics that can no longer be relegated to the periphery" (Ryan, 2007). Towards that end, the paradigm shift is away from explicit left brain cognitive regulation and the voluntary suppression of negative affect into implicit "right hemispheric specialization in regulating stress - and emotion-related processes" (Sullivan & Dufresne, 2006).

These concepts have been incorporated into clinical models of the psychotherapy change process. In 2003 I proposed, "the psychobiologically attuned therapist acts as an interactive affect regulator of the patient's dysregulated state. This model clearly suggests that the therapist's role is much more than interpreting to the developmentally disordered patient either distortions of the transference, or unintegrated early attachment experiences that occur in incoherent moments of the patient's narrative" (Schore, 2003). Even more than the patient's late-acting rational, analytical and verbal left mind, the growth-facilitating psychotherapeutic relationship needs to directly access the deeper psychobiological strata of the implicit regulatory structures of both the patient's and the clinician's right minds. Alvarez (2006) 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."

The paradigm shift thus suggests that at this point in time no theoretical model of change process can be exclusively psychological. Rather, it must be consonant with what we now know about the implicit psychobiological operations of the right brain, the biological substrate of the human unconscious. Keenan et al. (2003) observe: "By casting the right hemisphere in terms of self, we have a revolutionary way of thinking about the brain. A new model of the brain, therefore, must take into account the primary importance of the right hemisphere in establishing and maintaining our sense of awareness of ourselves and others."

In conclusion I'd like to return to the beginning of this talk, to the matter of a rapprochement of psychoanalysis and other sciences. Ten years ago I wrote:

> Is the time right? I suggest that the answer to this fundamental question involves much more than an objective appraisal of the match or mismatch of different current bodies of knowledge, although this is certainly a part of the process. But in addition to this, the response of psychoanalysis will have to involve a reintegration of its own internal theoretical divisions, a reassessment of its educational priorities, a reevaluation of its current predominant emphasis on cognition, especially verbal mechanisms, as well as a reworking of its Cartesian mind–body dichotomies. This redefinition involves the identity of psychoanalysis itself, in terms of its self-reference and its relations with the other sciences (Schore, 1997).

I am most grateful to the Division for this award, because it signals to me that the time is now right.

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