Comparing Apples to Oranges and Making a Fruit Salad
(Mixing Psychodynamic Science and Neuroscience):
A Review of Clay C. Whitehead’s “Neo–Psychoanalysis:
A Paradigm for the 21st Century”

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Clay C. Whitehead has elegantly announced, with his broad concept of “downward causation” (Campbell, 1974), the arrival of a new paradigm for psychoanalytic understanding, theory, process, and therapeutic action. In such an endeavor, he proposes to review and integrate various threads of thought which have contributed to psychoanalytic metapsychology over the past many centuries. More specifically, this article contextualizes this new paradigm from the perspectives of epistemology and of the theory of therapeutic action, as they might be integrated by employment of multiple perspectives: philosophy, metapsychology, evolutionary biologic–genetic concepts, physical anthropology, psychiatry, and neuroscience with recent functional imaging studies. He refines George Engel’s (1962) concept of the “bio–psycho–social” perspective on formulations of expressions of symptoms. He particularly offers his vision as a “paradigm shift” (Kuhn, 1970), strongly buttressing his argument by citing the classic Cartesian dualistic split between “traditional science” and “psychodynamic science” as being built upon a confusion of categories of understanding, the “mereological fallacy.” In fact, he sees this fallacy as the fundamental flaw in Freud’s otherwise highly original thought, which led him to focus primarily upon an intrapsychic, instinctual, one–mind based psychology.

Although this concern is reasonable, his explication far exceeds the needs of the workaday practitioner of psychiatry, psychoanalysis, psychotherapy, psychology, or even of early childhood play therapists. It has great hermeneutic relevance, and to that extent, this article represents a
major contribution to broadening and linking the foundations of various branches of scientific knowledge, while stimulating the reader to question his or her working assumptions. He unfortunately, as did Freud, dismisses an entire area of human understanding, that of spiritual development, and its potential for therapeutic action in conjunction with traditional therapeutic avenues. This is curious, as the function of spirituality within the context of developing mental health is as ancient as philosophy, and could be developed as another special case of Whitehead’s use of the organizing concept of “downward causation” (Campbell, 1974). It certainly was an aspect of Descartes’ (1637/1967), philosophy which he did not overlook in his rational science (Thiselton, 2002).

This “blind spot” may well parallel the limits of the “scientific method,” which Freud elevated as the only method by which we can know what we know (Nicholi, 2002), perhaps a special case, albeit a central one for modern thinkers, of the “epistemological conundrum,” to which Whitehead refers. American Postmodern Pragmatism, whose current leading advocate is Richard Rorty, a disciple of William James and John Dewey, essentially states skepticism must hold the day, as any true knowledge is unverifiable ultimately. Rorty quotes and endorses James’s view that “the True” is “only the expedient in thinking,” but also adds that there is no such thing as “getting reality right” because “there is no Way the World Is” (Rorty, 1998; Thiselton, 2002, pp. 21, 25). Nonetheless, this article is an important and thoughtful effort at bringing many perspectives into complementary and related postures. In that regard, it is particularly a timely, necessary, healing, and integrative effort at “consilience” (Whitehead, 2005) and epistemological cohesion.

Whitehead notes that Freud “split apart” the original “psychosomatic model,” creating a “mind–brain dualism.” Although this dualism may have paved the way to explication of the existence of the unconscious mind and eventually to Freud’s “structural theory of the mind” (Freud, 1923/1961), it left, almost by unconscious design, an avoidance of comprehension of the interfaces between mind and brain and between mind and external reality. The fruits of this dichotomy are now seen in the cultural shift in psychiatry in the 1990s to the “decade of the brain,” with its parallel emergence of the “managed care era.” Both phenomena effectively, in the name of “evidence–based” data, discount (principally for economic reasons) the relevance of psychodynamics and, even in some circles, the existence of the dynamic unconscious, transference, and countertransference in the therapeutic process. It is not uncommon to be admonished by a managed care review agent to disregard any work on transferential issues because, to not do so is to court regression and dependency, unnecessarily prolonging and complicating the symptom–targeted treatment approach.
The “intersubjectivists,” (Stolorow, Atwood, & Brandchaft, 1994), the
Kleinians (Bion, 1967, 1977; Racker, 1968), and the object relations theo-
rists (Fairbairn, 1944/1952; Gaddini, 1978; Ogden, 1979, 1986, 1988;
Scharff, 1992, 1987) have all made efforts at refining the Freudian model,
often using infant observation (Greenspan, 1981; Mahler, Pine, & Berg-
man, 1975; Seligmann, 1999; Stern, 1983, 1984, 1985, 1989) and attach-
ment theory (Bowlby, 1978) to bring psychoanalysis back to scientific rel-
evance in empiricism, at least from a clinically demonstrable perspective
of symptom relief, if not also mental “structural change.” More recently,
the exciting work of Allan Schore (2003a) has begun to clarify some po-
tential neurological correlates of such central psychoanalytic concepts
as transference, countertransference, repression, and projective identifi-
cation. Nonetheless, finding the missing links between psychodynamic
science and traditional science, which includes neurophysiology,
neuropsychology, and neurodevelopment, the basic sciences which
drive the pharmacologic armamentarium, has been elusive.

Whitehead cites the efforts of Solms and Turnbull (2002) to bridge this
gap with what he terms “dual–aspect monism.” This concept purports
that, just as with the ambiguity described by Heisenberg’s Uncertainty
Principle (1927), traditional science and psychodynamic science essen-
tially are describing the same thing from different, and logically incom-
patible, yet equally relevant, perspectives. He references the quantum
mechanic dualism of the particle and wave properties of light as a meta-
phor for this apparent dichotomy, as does Heisenberg. However,
Heisenberg also spoke to the inability, on a quantum level, to measure
accurately both the position and the momentum of a subatomic particle
without simultaneously influencing one of these measurements by the
very act of observing and measuring. Such a difficulty has been inher-
ently a restrictive factor in any psychoanalytic process reporting for re-
search into the effects and efficacy of psychoanalysis, as the process is
both a research tool and a clinical–therapeutic intervention. It utilizes
“participant observation” (Havens, 1976; Sullivan, 1953) as both its
measuring device and its therapeutic instrument.

Whitehead clarifies that such an apparent dualism philosophically
represents a “category error” of logic, or “mereological fallacy” (Bennett
& Hacker, 2003). Anthony Thiselton (2002) describes the philosopher’s,
Gilbert Ryle’s (1949), perspective on “category mistakes.” Ryle states,
“for the logical currency of what is stated about each differs . . . If body
and mind ‘exist’, each ‘exist’ in a quite different logical sense” (Thiselton,
2002, p. 69). Ryle implies that there are hierarchies of “existence” (pp.
17–24), which are qualitatively different, “apples” and “oranges,” if you
will, each being no less “true” or “valid” than the other. Thiselton adds,
“Ryle insists that (the phrase), ‘there occur mental processes,’ does not
‘mean the same sort of thing’ as (the phrase), ‘there occur physical processes.’ It makes ‘no sense’ either to conjoin or to disjoin the two” (Thiselton, 2002, p. 271). Apples and oranges can coexist as different descriptors of fruit, while being understood in the context of the other, and not necessarily including, nor excluding, the other.

To say that, “a conversion reaction of paralysis or blindness is mediated by neurological inhibitions and by unconscious psychic conflict,” would probably be a true statement. It would also be much like Ryle’s similar example of a “conjoining of terms”: “She came home in a flood of tears and a sedan chair” (Ryle, 1949, p. 23). So too is, in Whitehead’s judgment, Solms’s and Turnbull’s “dual–aspect monist position” of neuropsychoanalysis a “conjoining of terms,” which does not really clarify the missing link, alluded to above. In their pseudo–solution, he argues, Solms and Turnbull relate traditional science and psychodynamic science as both being different perspectives on the same “elephant,” as perceived by the proverbial blindfolded man, who is apprehending the same “elephant” that the unblinded observer perceives quite differently. As the elephant’s essence is the same for both, it would be a “monist” approach to integrate these dual perspectives into one.

But, just as Heisenberg would argue, both “observers” are “participant observers” whose interpretations are varied, based upon their own specifically dominant sensory inputs as measuring instruments. Neither have a “lock” on the verifiable truth of the specific “essence of the elephant.” Certainly one might reasonably assume that the unblinded observer has a hierarchically “higher,” even qualitatively different, instrument and perspective, while the blinded observer might reasonably be assumed to have a hierarchically “lower” instrument and perspective. One might then ask, “Which perspective is more ‘true’ than the other?” It is true that a conversion reaction of paralysis is affected by neurological inhibition. It is also true that unconscious emotional and symbolic conflicts mediate the mind’s influence over body function.

The “dual–aspect monist” view would suggest that each are equally true and valuable, although one may be more “verifiable” than another. Is the more “verifiable” one, say the neurological one, by which one could confirm by positron emission tomography, or by functional magnetic resonance imaging, that neural activation occurs in the occipital visual cortex, the more “objectively” true and therefore the best source of our knowledge? Yet, the conflict theory concerning the symbolic meaning of the act of witnessing a traumatic or over–stimulating, “primal scene” (Bion, 1967), has powerful “subjective” validity which is also clinically valuable, as any neurologist would corroborate. Whitehead resolves this dualistic “epistemological conundrum” quite differently than do Solms and Turnbull. He more succinctly describes this problem

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as “the mind and the brain lie in differing hierarchies of biological complexity.” Thiselton (2002) would say further, “What is often presented as a Cartesian entity (mind) within or alongside the body is better viewed as an adverbial mode of ascribing a dispositional character to bodily behavior (p. 271).”

From a physical anthropologic point of view, as Whitehead suggests, evolutionary pressures for group survival may depend more on “imitative learning” (Olds, 2006) than on “operant learning” (Pavlov, 1927; Wolman, 1973). Imitative learning would enable the evolutionary advance of the capacity to symbolize, and by extension, form groups (Winnicott, 1951), tools, technology, art, literature, and rituals of various sorts. Operant learning, driven by immediate rewards, might actually retard the development of symbolic logic, which is more optimally fueled in individual development by the concept of “optimal frustration” (Winnicott, 1951). The capacity to both symbolize and to think abstractly with an evolving sense of the mentation of the other are distinctly human, and not globally primate, functional capacities (Deacon, 1997). As ontogeny recapitulates phylogeny, the studies in infant mental development suggest that the capacity for discernment of intentionality in the other develops at about 9 months of age, from whence the ability to discern causality by projection of intentionality upon inanimate objects derives (Olds, 2006). The infant’s discernment of the mother’s intentionality (Goldman & Sripada, 2004; Winnicott, 1971, 1975) is fundamentally an affiliative, symbolic, and attachment–attunement capacity (Stern, 1984, 1985). Lorenz (1937; Wolman, 1973) referred to this process as “imprinting,” as it had both individual attachment and “imitative learning” (Olds, 2006) functions for the new pigeon, as well as for species–specific survival of the flock. Vamik Volkan’s organizing concept of the “chosen trauma” (1991), in which an ethnic group mythologizes the history of a traumatic event to its membership, and then over many generations uses it to justify not only an “us against them” framework for listening to others, but also uses it to justify ongoing reprisals and counter reprisals, may represent a similar form of “imprinting” on an inter–ethnic and international scale (Volkan, Montville, & Julius, 1991).

This “imprinting” may begin in the early development of and be influenced by “mirror neurons,” (Gallese, Keysers, & Rizzolatti, 2004; Ramachandran, 2000; Rizzolatti & Craighero, 2004), which have imitative learning and neurodevelopmental, affect–regulatory significance (Schore, 2003b). As such, “imitative learning” serves for the individual similar functions in the culture: commonality through ritualistic, socially based, and socially rewarded functions (Olds, 2006). Such a perspective clarifies, as does Whitehead, the complex interplay of hierarchical vari-
ables, each from within a different scientific framework, but each also influencing a different variable. More specifically, “mirror neurons,” by virtue of their organizing influence in laying down “internal object relations” (Kernberg, 1980) for “virtual (fantasied) anticipatory enactments,” serve both psychological and neurological developmental functions for the individual (Olds, 2006). In the orbitofrontal cortical mesolimbic cortex, those “higher level” functions, whose development is stimulated by the “mirror neurons,” serve affective regulatory purposes for the “lower level” midbrain–brainstem, more primitive, reactive responses (Perry, 1997, 2004; Schore, 2003a). Extrapolated to infant development, the imitative learning that derives from the temperamental modulation that “mirror neurons” can promulgate in an average expectable mother–infant dyadic environment (Greenspan, 1981; Winnicott, 1971) may lend itself to the development of prototypical empathic, and self-regulatory capacities (Seligman, 1999), whose hallmark is not only “object permanence” (Piaget, 1954; Piaget & Inhelder, 1969), but also “object constancy” (Mahler, 1972; Mahler, Fine, & Bergman, 1975).

The concept of a “downward causation” (Campbell, 1974) is exemplified in Whitehead’s discussion of how natural selection can operate at both a genomic level and at a group (family, tribal, or national) level. For example, “imitative learning,” which is found in both the chimpanzee and the human 2-year-old child, became more evolutionarily important and influential as we became more social, (because) social skills, including imitation, became increasingly important—relative to operant learning (immediate rewards)—for survival in the group, and indeed for survival of the group. The evolving (human) brain then enhanced (as chimpanzees did not) imitative skills relative to, or possibly at the expense of, operant–associative learning skills (which retard the need for development of capacity for symbolization in the chimpanzee). We might thus expect that as human cultures developed, imitation of rituals, in themselves not beneficial to the individual, would be supported because they enhance the group’s purposes and communal identity. (Olds, 2006, p. 29–30).

Of particular note here is the suggestion, based on multiple anthropologic and neuropsychological studies (de Waal, 1989; Newberg, d’Aquili, Newberg, & Demarici, 2000), that the capacity for reconciliation and forgiveness, which are themselves influenced by genetic factors (Ashton, Paunonen, Helmes, & Jackson, 1998), may have a “downward causation” of significant evolutionary import. Stein and Kaminer (2006), in their recent paper, “Forgiveness and Psychopathology: Psychobiological
and Evolutionary Underpinnings,” note, “Reconciliation is an important phenomenon in primates, suggesting that forgiveness in humans may have evolutionary underpinnings . . . Reconciliation rituals may play a crucial role in paving the way for cooperative relationships” (p. 88). Functional MRI studies have demonstrated, on the lower hierarchical level of neuroanatomy and neurophysiology, that there is, in treatment–responsive PTSD patients, significantly increased activation of the left superior frontal cortex, the left middle frontal gyrus, the posterior cingulate gyrus, and the precuneus (Farrow et al., 2001, 2005). “The posterior cingulate gyrus has been implicated in monitoring of internal states and evaluation of self–behavior,” as well as “in response to forgiveability judgments,” Stein and Kaminer (2006, p. 88) note. Here too appears an interface between the theory of therapeutic action and the healing potential of spirituality, more particularly: the interface between the therapeutic action of mourning (Horwitz, 2005), mentalization (Fonagy, Gergely, Jurist, & Target, 2002), forgiveness (Akhtar, 2002; Siassi, 2004) and the spiritual experiences of forgiveness, redemption, and transcendence (Stern, 2006). Stein and Kaminer (2006) further clarify, “… a growing database of controlled trials of forgiveness therapy has indicated its efficacy in decreasing anger, anxiety, and depression . . . ” (p. 89; Baskin & Enright, 2004; Coyle & Enright, 1997; Freedman & Enright, 1996; Lin, Mack, Enright, Krahn, & Baskin, 2004; Ripley & Worthington, 2002; Rye et al., 2005; Spiers, 2004). Whitehead further clarifies the therapeutic development of the receptivity to “downward causation” by noting that the nurturant relationships of childhood are often paralleled by the therapeutic situation (Winnicott, 1956/1975b), thereby transmitting “structuralized energy” multi–modally, resulting in a “higher structural organization of brain and mind” (Whitehead, this issue, p. 19). Allan Schore, in his ground–breaking paper (2003a), “A Psychoneurobiological Model of Projective Identification,” describes the therapeutic potential of psychotherapy by extrapolation to the concept of neural plasticity. He comments,

It is important to note that the right hemisphere cycles back into growth phases throughout the lifespan (Schore, 2001; Thatcher, 1994) and that the orbitofrontal cortex retains a capacity for plasticity in later life (Barbas, 1995), thereby allowing for the continuing experience–dependent maturation of the right–frontal regulatory system within the growth–facilitating environment of an affect–regulating therapeutic relationship. (Schore, 2003a, p. 107).

Such concepts echo those of Bruce Perry’s studies on “neurodevelopmental factors in the cycle of violence” (Perry, 1997). Perry de-
scribes how traumatic violence and emotional neglect can alter the “sequential development” of the “plastic, developing brain,” such that the normal development of higher neuropsychological functions found in the “average expectable environment” (Greenspan, 1996; Winnicott, 1971) are inhibited in their development in favor of the neural activation (“imprinting” of temperament, also?) of the lower, more primitive portions of the brain. This concept is based upon the notion of a “use–dependent capacity to make internal representations (by neural activation) of the external or internal world,” and is the “basis for learning and memory” (Perry, 1997, p. 140).

In “sequential development,” the more primitive brain regions (brainstem and midbrain) are first activated and then “over time, the output of these areas is shaped, modulated, modified in more mature fashion as the higher brain areas (limbic and cortical) develop” (p. 141). Perry adds, unwittingly describing the psychoanalytic concepts of fixation and regression, “Any disruption of development which either ‘overdevelops’ the midbrain and brainstem, or ‘underdevelops’ the limbic and cortical areas will result in an imbalance of the Cortical Modulation Ratio, predisposing to aggressive and violent behavior” (p. 141). The Cortical Modulation Ratio could perhaps be a proportionate measure of neuropsychological “downward causation” forces. Of special note is the idea that many such individuals, who have experienced such trauma or deprivation in the developmental window of 14 to 36 months of age, often create nonverbal, “muscle memories” (Ragan, 1999a; Ragan & Seides, 1990). These predispose to “action language” (Schafer, 1968), rather than to more semiotic and symbolic language, resulting in borderline or other “Cluster B” (DSM–IV–TR) personality traits (APA, 2000).

Michael Balint described well how such individuals respond to psychoanalytic psychotherapy and their need for an “unobtrusive analyst” to facilitate access to maturational forces developmentally arrested in those patients with lower Cortical Modulation Ratios (Balint’s “Basic Fault,” 1968). The “unobtrusive analyst” creates a “psychoanalytic potential space” (Ogden, 1986, 1988), which allows for consideration of body language, breathing rhythms, muscle tone, tone of voice, texture and pressure skin sensations, and emotional ambience, rather than verbal communication, as primary routes of gaining understanding of transference and countertransference. Thus, the “preverbal” (Gaddini, 1978) developmental conflicts (often around temperament and mother–infant dyadic “fit”) become the subjective symptoms slated for healing, repair, and rebuilding toward more “classical” (neurotic) verbal expression, by employment of the “psychosomatic potential space” (Ragan & Seides, 1990). Others have carried such integrative perspec-
tives to more directly include the body by means of massage and manual
manipulations in combination with more classical derepressive verbal
psychotherapy to engage such “upward” and “downward causation”
energies to employ such neural plasticity potential for healing of
attachment and trauma–related conflicts (Fletcher, 1978; Forman, 1998;
Mechner, 1998; Rubenfeld, 2000).

Such developmental arrest creates “traumatic bonds” (Perry, 2004),
which are the essence of what psychoanalysts refer to as identification,
both of an imitative type and of a defensive, identification with the ag-
gressor type (Freud, 1936; Olds, 2006). These two types of identification,
as described by Olds, may be facilitated by the evolutionarily progres-
sive “mirror neuron” (Jeannerod, Arbib, Rizzolati, & Sakata, 1995;
Rizzolattti & Craighero, 2004), which creates the substrate for “virtual
(fantasied) enactments” (Olds, 2006) in the premotor cortex, when
goal–directed actions are witnessed by primates, allowing imitative
learning and the rudiments of “empathic attunement” (Beebe &
Lachman, 1988, 1994; Stern, 1984) and of “trial identifications” (Erikson,
1950, 1962). Of note is Olds’ formulation that, “appreciation of others’ af-
facts occurs in a way similar to that seen in the perception of actions. Im-
aging studies show that certain areas are stimulated and activated when
one perceives the affect of another. In simply observing another’s emo-
tional state, areas are activated, the same areas that light up when one
has that emotion oneself” (Olds, 2006, p. 34). Autism and infant observa-
tion studies (Williams, Whiten, Suddendorf, & Perrett, 2001) support
this view, and point to how in healthy individuals the emotional exter-
nal reality may be simulated internally, especially in influencing infan-
tile development (Ragan, 1999a; Seligman, E., 2005; Seligman, S., 1999).
Such a linkage may turn out to be the neuropsychological anlage of the
psychoanalytic concepts of projective and introjective identification
(Langer, 1988; Ogden, 1986).

Near the end of the article, Whitehead returns to the fundamental
question of epistemology of traditional and of psychodynamic sciences,
or how we know what we know. He cites examples of both “bottom–up”
and “top–down” (Myashita, 2004) evidence for improvement of depres-
sion in the Goldapple study (2004), which demonstrated “modulation of
cortical–limbic pathways in major depression” by positron emission to-
mography in therapeutically recovered patients, influenced by either
paroxetine or by psychotherapy (cognitive behavioral therapy). Just as
seen in the Stein and Kaminer (2006) study, the posterior cingulate gyrus
and hippocampus (limbic structures) showed neural activation in con-
junction with the prefrontal and parietal cortex (cortical structures), sug-
gestive of evidence similar to Perry’s Cortical Modulation Ratio thesis
(Perry, 1997). Whitehead suggests these changes support both “down-
ward causation” (Derryberry & Tucker, 1992; Sperry, 1985), or “top–down,” and an “upward causation,” or “bottom–up” (Goldapple, 2004) mechanism of control. What is particularly interesting in the Goldapple study is that the two treatment modalities differ in their access to the “common area”: paroxetine “lighting up” the brainstem and centers “below” the common area (striatal and subgenual cingulate), while the psychotherapy “lights up” the frontal cortex (anterior cingulate gyrus and Schore’s “orbitofrontal affect regulating system”) and centers “above” the common area.

These data are also consistent with neural activation of the prefrontal cortex and the rostral anterior cingulate cortex, seen in the influencing of the midbrain endorphin sensory anesthesia system (Wager et al., 2004) for placebo (psychological suggestion) effect in pain management. Psychological suggestion, certainly the “manna” of spirituality, according to Freud (1910), then appears to diminish the ability to “feel” pain at the midbrain, but also at the anatomically “higher” level of the “pain matrix” (Singer et al., 1999; (bilateral anterior insula, rostral anterior cingulate cortex, brainstem, and cerebellum). Singer’s studies on neural activation of “empathic pain” demonstrated activation of those cortical centers (rostral anterior cingulate cortex and anterior insula) known for the experience of “subjective unpleasantness,” but no activation in the more “objective” areas of pain perception. As previously noted, the emotional pain of “grudge–holding” and unresolved grief after trauma seem relatively mitigated by “forgiveability judgments” in psychotherapy (cognitive behavioral therapy). This change was manifested in the corresponding neural activation of the posterior cingulate gyrus, which is “implicated in the monitoring of internal states and in the evaluation of self–behavior” (Farrow, Hunter, Wilkinson, 2005; Stein & Kaminer, 2006, p. 88).

Schore (2003a) hypothesizes that the capacity for empathic perception of the other is contingent upon maturation and affect–regulating capacities of the relatively “plastic” orbitofrontal cortex, whose role may be one of the “missing links” in the neurophysiology of empathic pain, “sympathetic” pain, and “objective” pain, and of affective empathy, as developed from the basic foundation of primitive projective and introjective identificative mental processes (Zinner, 1989). The capacity for forgiveness, reparation, empathic remorse, concern for others, and self–reflection are all aspects of the “depressive–historical mode of relating” (Ogden, 1986), characteristic of the achievement of “object constancy” at the decisive “rapprochement subphase of separation–individuation” (Mahler, 1972). Such characteristics are particularly absent in the personality profiles of sociopathic adults, conduct disordered adolescents, and malignant narcissistic character disordered adults (Fujii,
Tojioka, Lichton, & Hishinuma, 2005). Schore (2003b) relates that psychopathology of these sorts of “empathically deficient” individuals has a common finding of impaired development, or “rigidified” plasticity of the orbitofrontal cortex. These type of studies may lead us in the direction of understanding the neuroanatomical and psychological links buttressing such concepts as “vicarious traumatization” (Ragan, 1999b, unpublished), and “therapeutic symbiosis” (Searles, 1965, 1973, 1975). In vicarious traumatization, the caregiving person becomes so sensitized to traumatic scenes, due to repetitive overexposure, that the caregiver develops similar symptoms to those of the patients they are trying to help. Whitehead cites a similar, albeit milder, phenomenon when Milton Greenblatt experienced his own “synchronization of pulse rate, respiration rate, and galvanic skin response,” with that of his patients in psychotherapy. Given the proneness to such dynamics for many psychotherapists, who often have entered the profession for unconsciously reparative reasons (Searles, 1967, 1975), the familiar countertransferential process of “therapeutic symbiosis” (Searles, 1965), might be understood as defensive against “vicarious traumatization” dynamics. The classical “folie–a–deux” (a.k.a., “paranoid symbiosis,” Searles, 1965) might be a safer identification than the experience of the mutually traumatizing, maliciously rageful, “negative therapeutic reaction.”

Certainly Winnicott’s (1967/1971a) seminal work on empathy, “The Mirror–Role of the Mother and the Family in Child Development,” may point to the early relational aspects of engagement of the “mirror neuron,” which could influence the development of many of these cortical–limbic brain areas. Whitehead cites how the decoupling of empathic/psychological pain from the “objective,” physical reactions to pain is facilitated by the anterior caudate, serving virtually as a “downward causation” pain gating system between the rostral anterior cingulate cortex and the posterior anterior cingulate cortex, respectively. With this model for empathic and physical pain, one might more specifically reconsider the concept of “vicarious traumatization” in the context of an analyst’s “negative countertransference” in the all–too–painful, “negative therapeutic reaction.” The analyst’s countertransference, often being unconsciously driven, and certainly fueling an analyst’s acting–out (Racker, 1968), may be neuropsychologically engaged in a “bottom–up” process, overriding any “downward causation” benefit of developing “analytic space” (Ogden, 1986). The mechanism for this regressive influence on the analyst’s analyzing function may be based in something as elegant as a transient dynamic shift in the “Cortical Modulation Ratio” (Perry, 1997), or as simple as an inhibition
of the memory retrieval capacity of free association: an inhibition of “reverie” (Ogden, 1997).

Whitehead cites Miyashita’s (2004) studies of retrieval of “event memory,” and its relationship to “unique configurational associations between environmental stimuli and the behavioral context,” which Whitehead likens to “transference.” Miyashita has located this function in the frontal cortex, “which operates through ‘top–down’ signals to the temporal cortex.” Presumably, such retrieval mechanisms are inhibited during “repression,” according to Whitehead. Such repression could conceivably be mediated by the “bottom–up” influences of neuropsychological “imprinting” (Lorenz, 1937) of affect dysregulation (Schore, 2003b) in the anterior insula and the rostral anterior cingulate cortex, interfering with the analyst’s capacity for “containment” (Bion, 1977) and “metabolizing” (Kernberg, 1980) such “imprinted,” but inchoate retrieval data.

In this regard, Allan Schore (2003a) has presented an elegant interdisciplinary theory: “Clinical Implications of a Psychoneurobiological Model of Projective Identification,” referencing Racker’s (1968), Ogden’s (1979, 1997), Scharff’s (1992), Loewald’s (1973, 1960), and Perry’s (1995) works. In this work, he discusses the neurological underpinnings of the “therapist’s deflection of negative states and the intensification of interactive dysregulation (p. 84).” This dysregulation may be stabilized and repaired, contingent upon the maturational process of “the orbitofrontal areas of the right cerebral cortex, that are associated with affective shifts” in their relation to “those in the left verbal–linguistic hemisphere . . . specifically involved in ‘semantic implicit retrieval that does not depend upon intentional recollection’ (Demb et al., 1995)” (p. 106). Schore states, “An increase of connections between right–and–left–orbital areas may thus allow for left–hemispheric retrieval from implicit–procedural memory and semantic encoding of right–hemispheric emotional states” (Schore, 2003a, p. 107).

Olds (2006, p. 23) describes “procedural memory” as the “learning of skills and habits, which may be an important aspect of the identification process,” particularly as influenced by the “imitative learning” process associated with “mirror neurons.” In the sport of professional golf, where “procedural memory” is essential to consistent top quality performance, Tommy Armour advocated a style of learning of golf fundamentals by mimicry and “translation” of his illustrations “into a language your muscles can read and remember” (Armour, 1953, p. 1). In my own clinical work (Ragan & Seides, 1990) with movement therapy (“dance therapy”) and psychoanalytic psychotherapy, the movement enactment often preceded the putting into words (Mahl, 1977; McLaughlin, 1987) of the more explicit dream–related and “semantic en-
coding of right–hemispheric emotional states” (Schore, 2003a). As an example of therapeutic “upward causation,” the integration of psychoanalytic psychotherapy with psychoanalytic movement therapy can evoke a “day precipitate” (Kelman, 1975) of subsequent latent dream themes and their symbolic imagery, long before the “putting into words” has occurred (Ragan & Seides, 1990). In such work, the enactment in the movement therapy serves as a prototypical “waking dream” (Kern, 1987), anticipating the more symbolic and higher level dream content and dream work (Mancia, 2006; Ragan & Seides, 1990). Miyashita’s concept of “event (episodic) memory” may be akin to Schore’s and Olds’s concept of “procedural memory,” which Ragan and Seides (1990) have linked to the concept of “muscle memory” and the “psychosomatic potential space.”

The “muscle memory” concept could be easily linked to the cognitive neuroscience research on “implicit memory” (a.k.a., “non–declarative memory”; Schacter, 1995; Squire, 1994), which subsumes procedural memory and emotive/affective memory, whose organization is developmentally first overseen by the infantile amygdala, basal ganglia, and cerebellum for the storage and retrieval of preverbal experiences (Mancia, 2006). Recent studies by Stickgold, Malia, Maguire, Roddenberry, and O’Connor (2000) on the sequelae of loss of “explicit memory” (or “declarative memory” for events) from lesions to the bilateral temporal lobe and hippocampus, showed that learning and dream representation of what was learned could still be accomplished “without the contribution of explicit memory, which requires the activation of the hippocampus and of the temporal and basal cortex” (Mancia, 2006, p. 85). Mancia notes, “In the cases observed by Stickgold et al. (2000), the explicit memory was definitely impaired, but a non–explicit and non–conscious kind of memory was left and could emerge in dreams. This observation shows that an experience can be stored in the implicit memory and can be represented symbolically in dreams” (p. 86).

This finding is of particular relevance to the psychoanalyst’s work, in which dream work, latent and manifest content, body movements, their role in the development of the ego (Kestenberg & Sossin, 1979), and all their current transferential implications, serve an organizing, or “downward causation” purpose in the therapeutic process. Kestenberg notes, “The aspect of the ego which adapts to space, weight, and time as the principal ingredients of reality was impeded or infringed upon” (Kestenberg, 1990, p. 41) in the adaptation of “children under the Nazi yoke” to the loss of personal space and play experience extant in the concentration camps. Such impairment of adaptive ego functioning is common to most traumatized patients. Provision of a secure, safe “holding environment” (Modell, 1976) is essential for the reparative potential of
any therapeutic “downward causation” intervention with such individuals. With such impairment of adaptive ego functioning in situations of acute or cumulative trauma, the capacity of accurate encoding of memory is necessarily distorted in the “downward” direction toward more “midbrain–brainstem,” “muscle memory”–dependent sites, as the prefrontal cortical/hippocampal–temporal lobe system is either arrested in development or relatively atrophied (Perry et al., 1995, 1997, 2004; Schore, 2003b).

These formulations all speak directly to Whitehead’s concept of a reciprocity between hierarchical levels which have profound psychotherapeutic import. More specifically, his hypothesis is supported specifically by other functional magnetic resonance imaging studies reported by Hariri, Bookheimer, and Mazziotta (2000), who provided evidence that higher regions of specifically the right prefrontal cortex attenuate emotional responses at the most basic levels in the brain, that such modulating processes are “fundamental to most modern psychotherapeutic methods,” that this lateralized neocortical network is active in “modulating emotional experience through interpreting and labeling emotional expressions,” and that “this form of modulation may be impaired in various emotional disorders and may provide the basis for therapies of the same disorders” (Schore, 2003a). (p. 107)

The plasticity of the orbitofrontal cortex, as well as the fact that “the right hemisphere cycles back into growth phases throughout the lifespan,” allow for the “continuing experience–dependent maturation of the right–frontal regulatory system within the growth–facilitating environment of an affect–regulating therapeutic relationship” (Schore, 2003a, p. 107). Such a therapeutic relationship is facilitative of mature “containment” (Bion, 1977) of projective and introjective identification processes common in the negative therapeutic reaction (Ogden, 1979, 1997; Scharff, 1992) and in the arduous working through of the “transference neurosis” (Bird, 1972; Greenson, 1965).

Additionally, the neuroanatomical substrates of “upward causation,” whether found in the “paleomammalian formation” (MacLean, 1990) of mesocortical–limbic structures, or found in the “mammalian cortex” (MacLean, 1990), are nearing clarification. Allan Schore’s (2003b) paper, “The Early Organization of the Nonlinear Right Brain and the Development of a Predisposition to Psychiatric Disorders,” addresses the neurodevelopmental effects of trauma and neglect. He describes “abnormal critical period microenvironments” in which “cell death of orbitofrontal and/or temporal cortical neurons that respond to emo-
tional facial displays would lead to permanent deficits in reading the facially expressed emotional states of others. Deficits in emotion–decoding ability are seen in abused children (Camras, Grow, & Ribordy, 1983)” (Schore, 2003b, p. 119. Such traumatic deficit states have lead to actual neurological changes with atrophy of hippocampal and mammalian bodies via trauma–driven “imprinting” and “short–circuiting” through the amygdala (Schore, 2003b). This hypothesis might account for the clinically observed “short–fused” rage reactions, rarely accessible to verbal intervention in traumatized patients, perhaps a paradigmatic example of “upward causation.” These neural correlates may be the foundation of our dynamic formulations of borderline personality disorder, narcissism, sociopathy, and perhaps even adolescent conduct disorder (Schore, 2003b).

In summary, Whitehead’s explication of a burgeoning interdisciplinary field of study and theoretical development has broadened the epistemological base of what he rightly calls “neo–psychoanalysis.” Future practical applications of his work could include research and therapy process studies in the fields of: trauma and attachment pathologies; sleep and dream research; family systems theory (Scharff & Scharff, 1987); forensic psychiatry; pain and addiction psychiatry; neuropsychology; psychoimmunology; child and adolescent psychiatry and psychoanalysis; infant observation; international diplomacy around the “chosen trauma” concept of ethnic conflict (Volkan et al., 1991); and perhaps even Freud’s forbidden bastion, the psychology/neuroscience of spirituality. Whitehead has managed to begin a rational synthesis of previously rigid mind–brain dualism. A concept worth further exploration concerns the limits to which “downward causation” can have influence therapeutically. Further, under what conditions might there be “positive” and “negative,” “top–down” and “bottom–up,” therapeutic and anti–therapeutic feedback “loops,” both intra–cranially and interpersonally? How might one understand the effects of neuro–feedback conditioning for seizure inhibition or for ADHD (Higgins, 2006; Kwan, 2002); or similarly, the neuromodulatory use of transcranial magnetic stimulation for depression (O’Reardon, Peshek, Romero, & Christiano, 2006) in this new framework? The fields noted above can only benefit from this integration. More specifically, psychoanalysis can join the ranks of those fields claiming a modicum of “objective” and “subjective,” “rational,” and “hierarchical” understanding of the essential workings of what it is to be human.
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